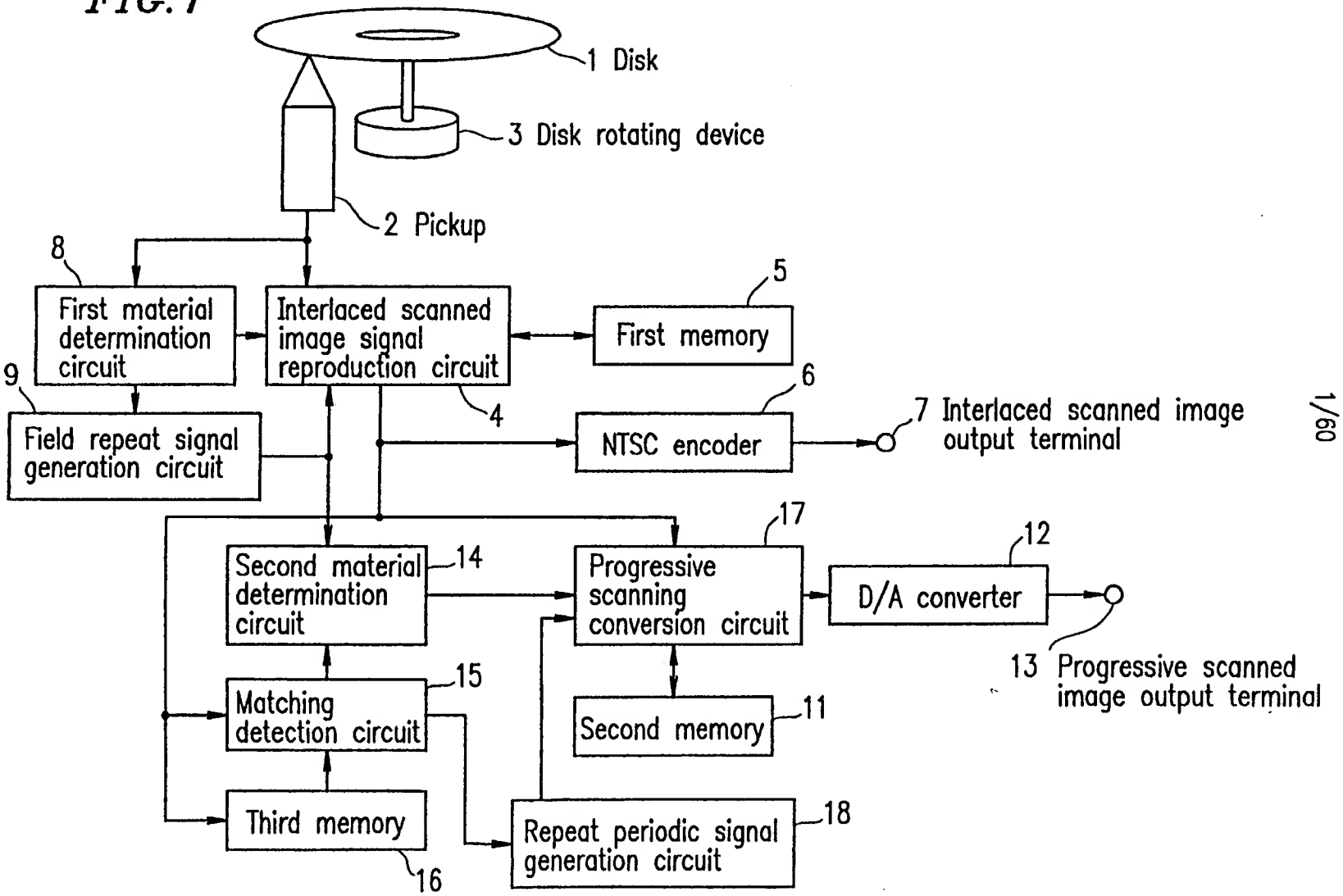
FIG. 1



1/60

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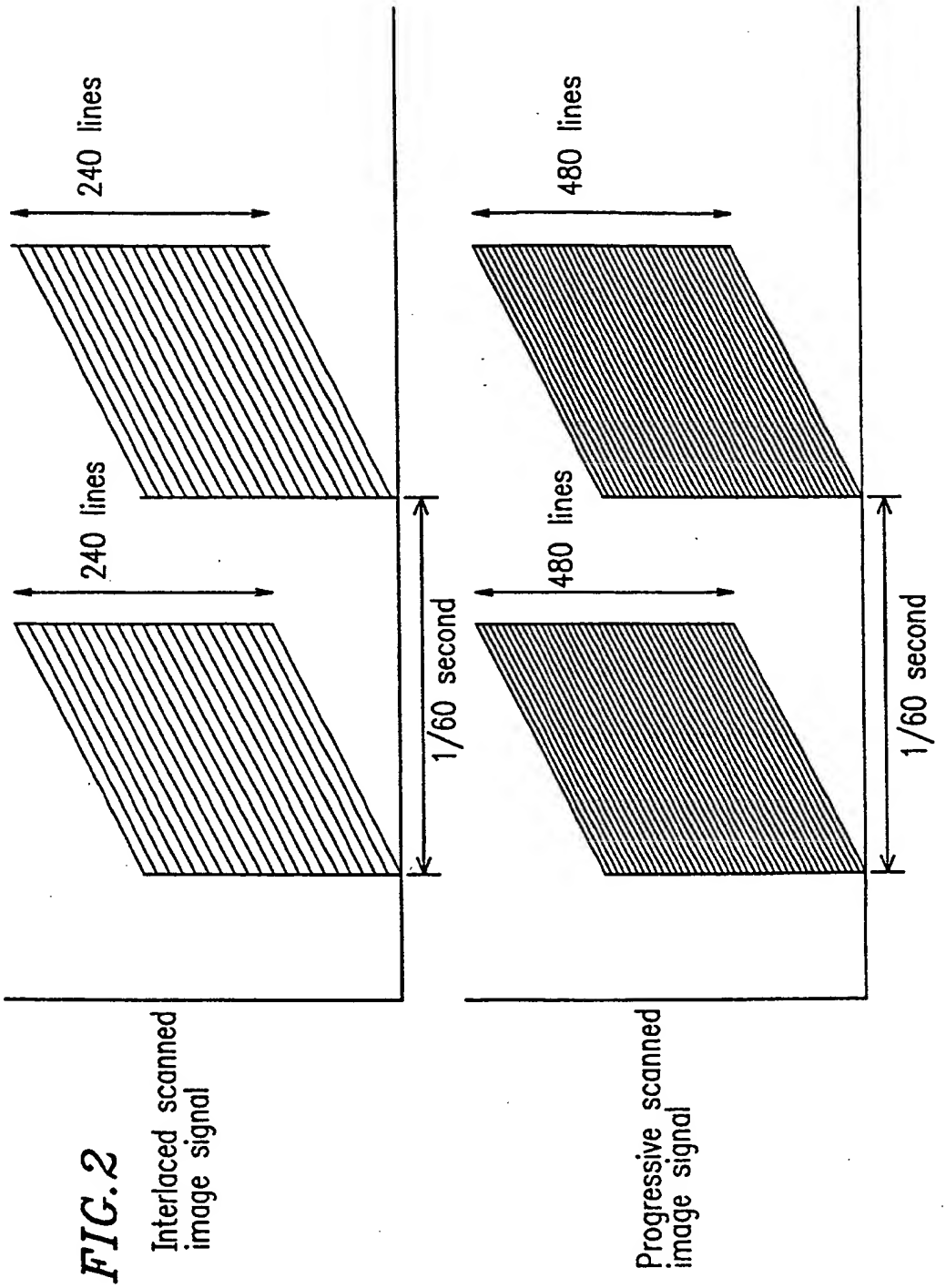
240 lines
240 lines
1/60 second
Interlaced scanned image signal
480 lines
480 lines
1/60 second
Progressive scanned image signal

FIG. 2

FIG. 3

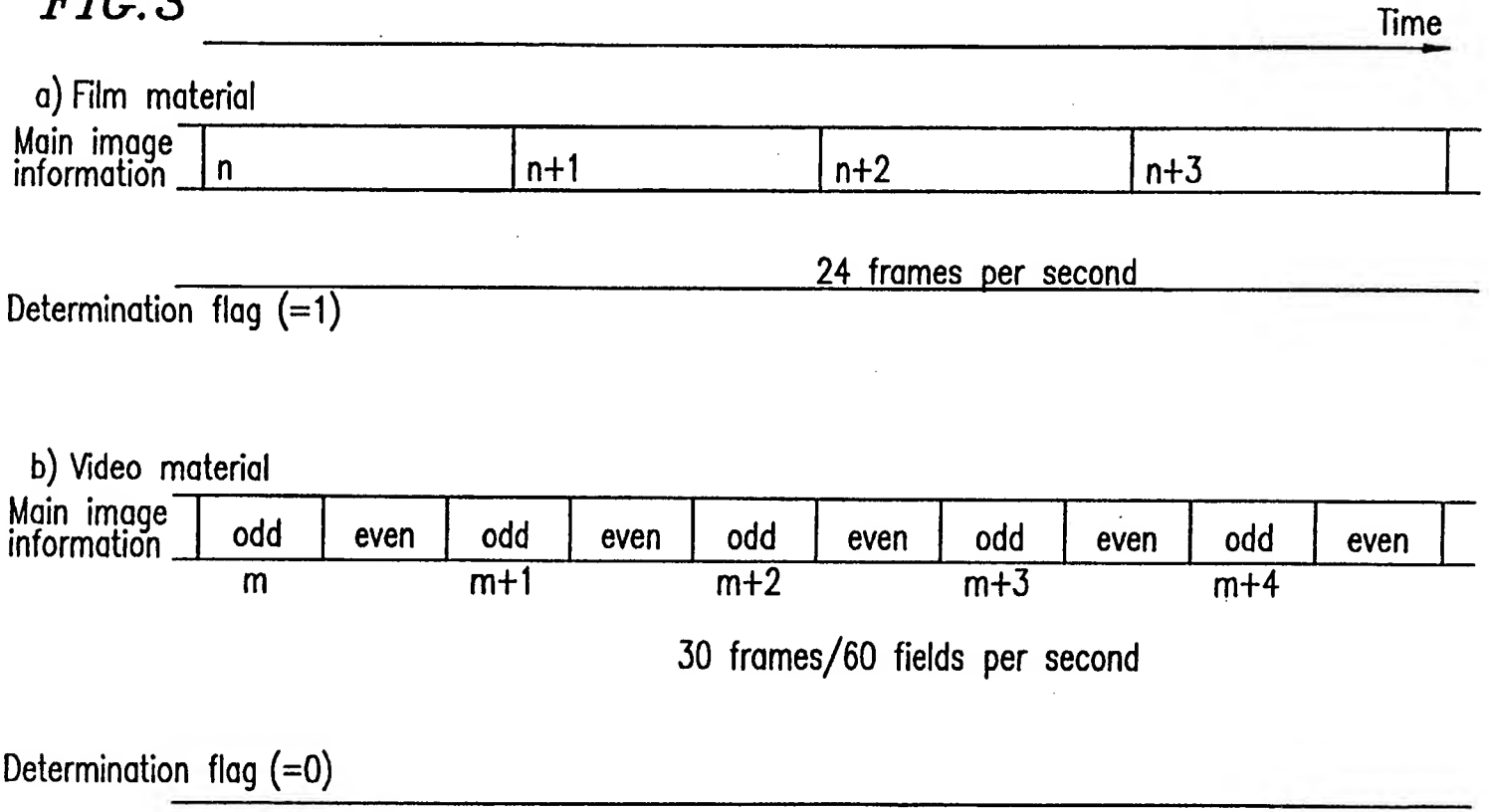

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FIG. 4

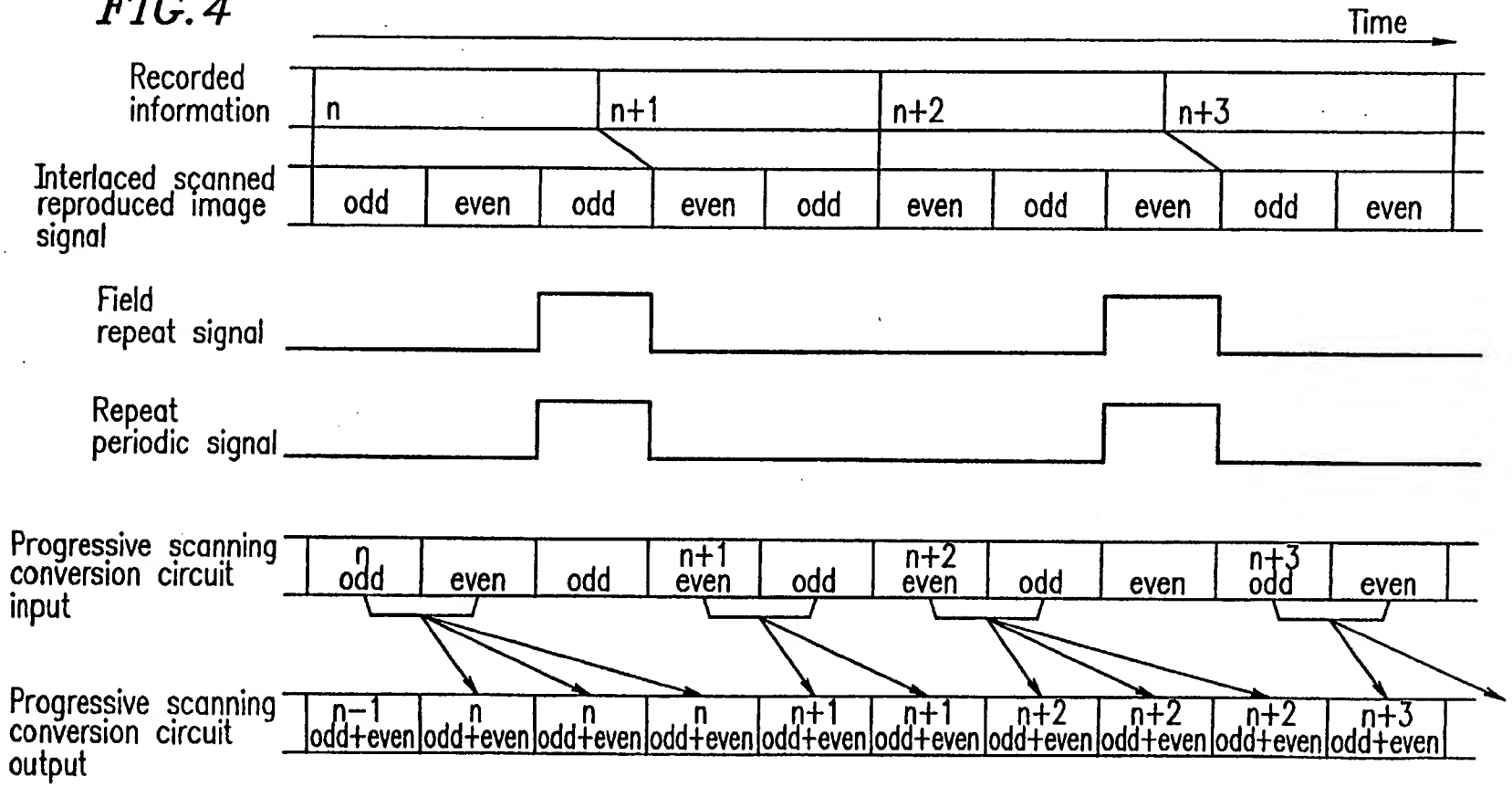

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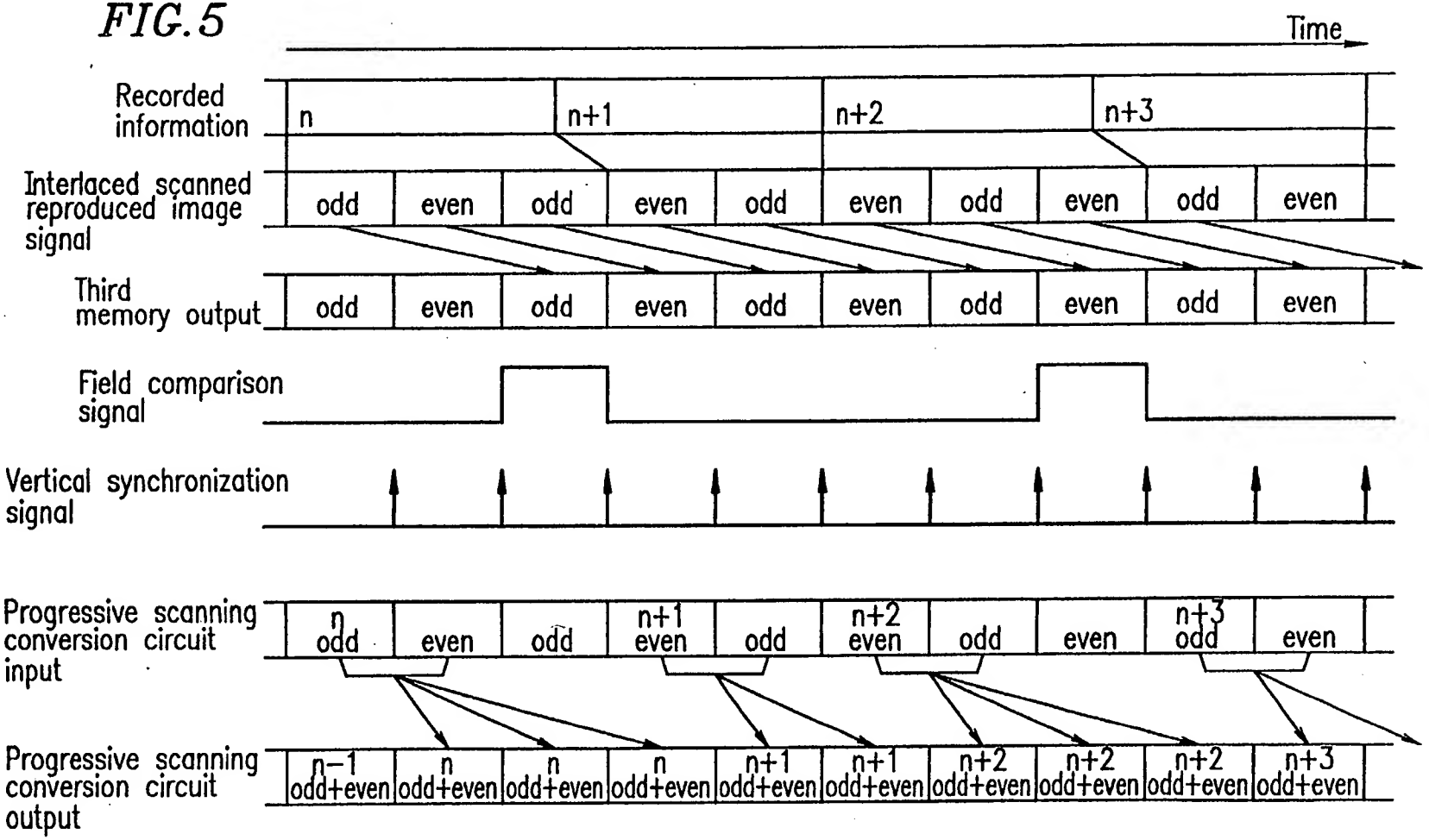
FIG. 5



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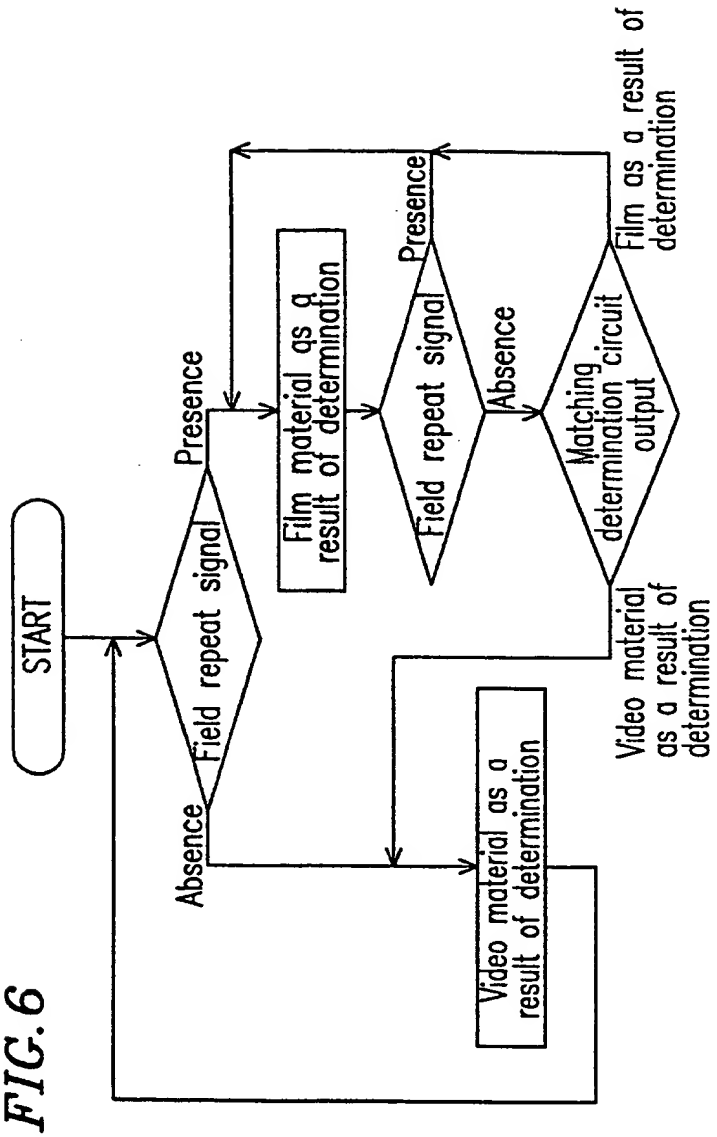
START
Field repeat signal
Presence
Absence
Film material as a result of determination
Field repeat signal
Presence
Absence
Matching determination circuit output
Film as a result of determination
Video material as a result of determination
Video material as a result of determination

FIG. 6

FIG. 7

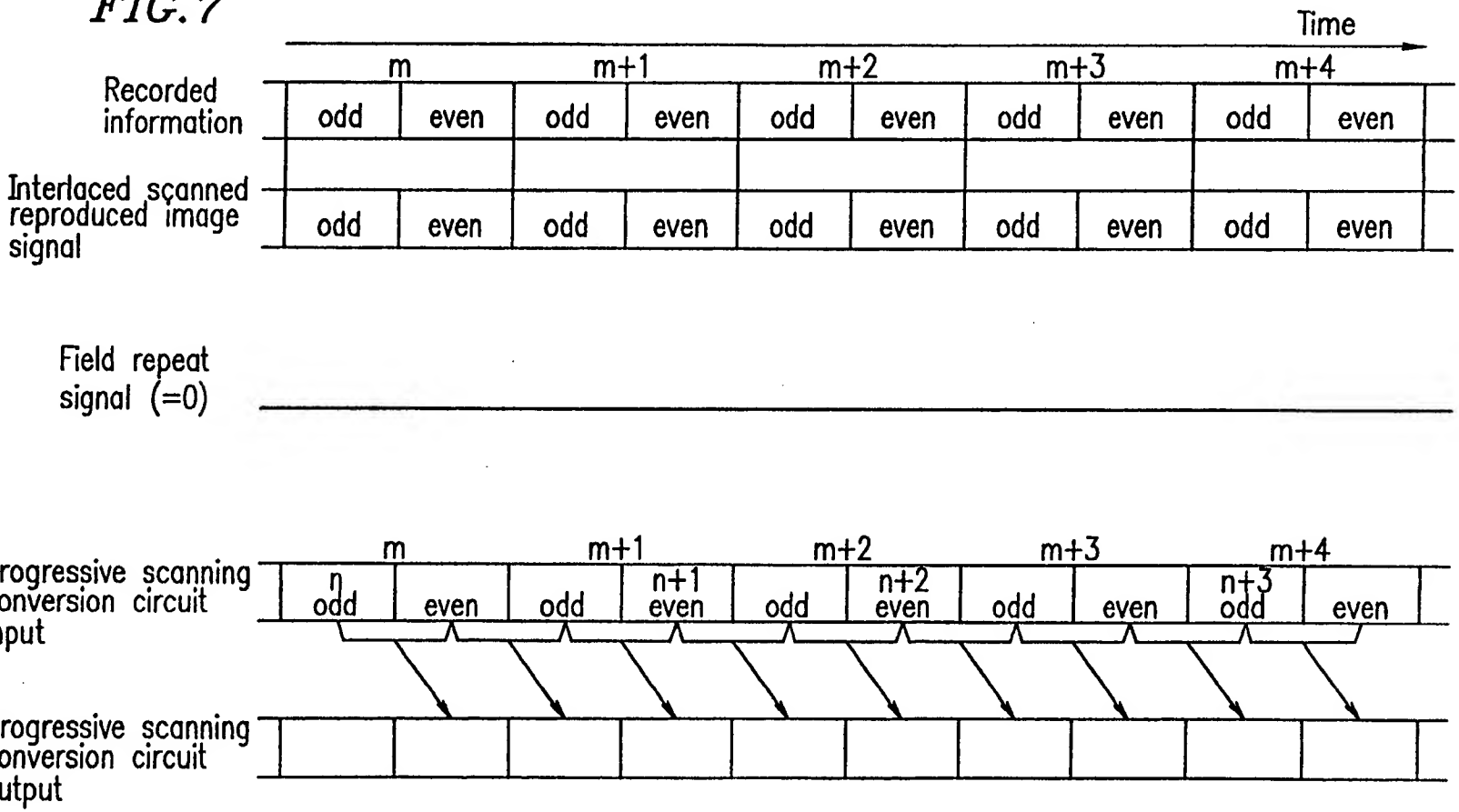

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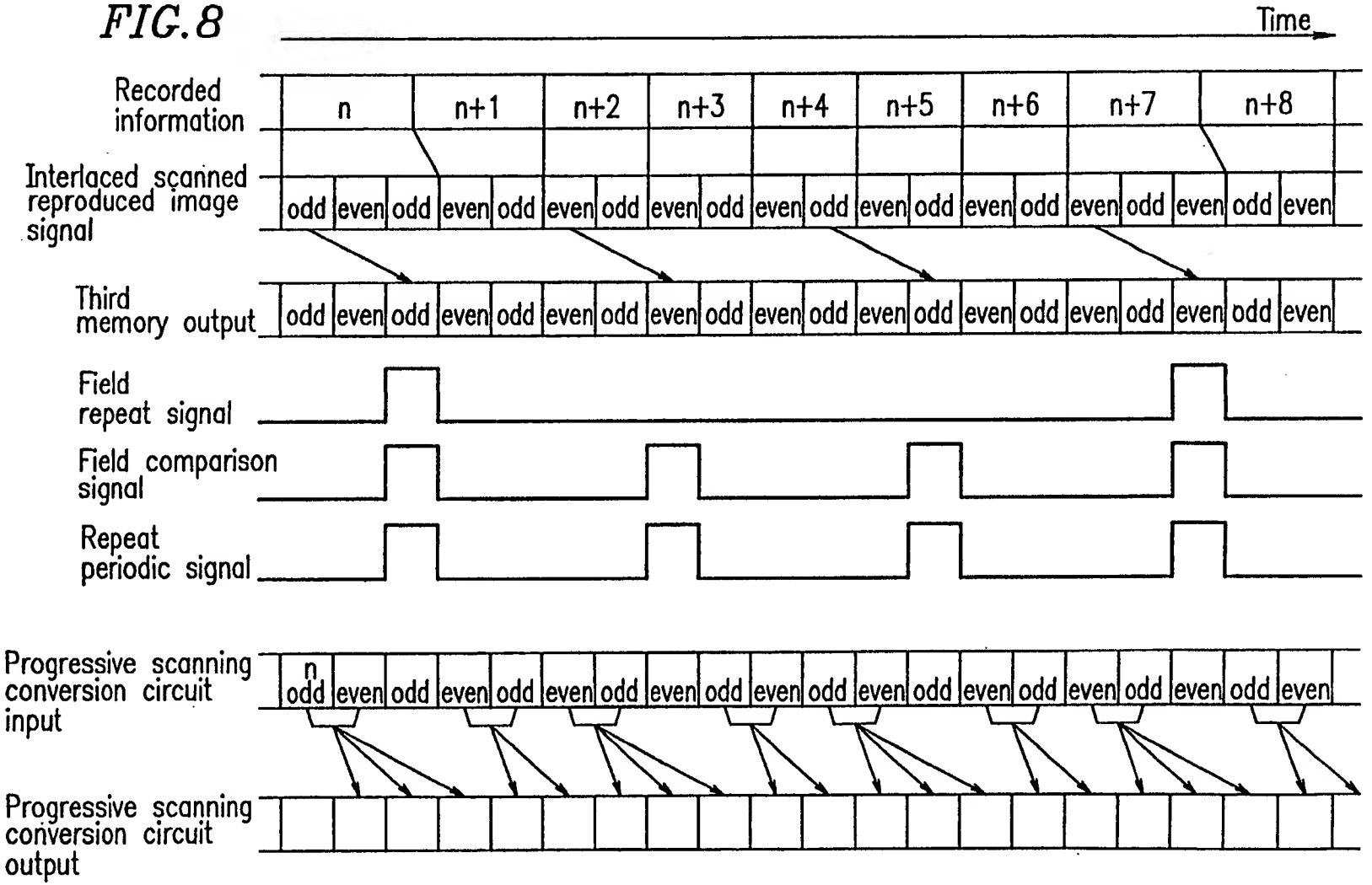
FIG. 8



960693 /60

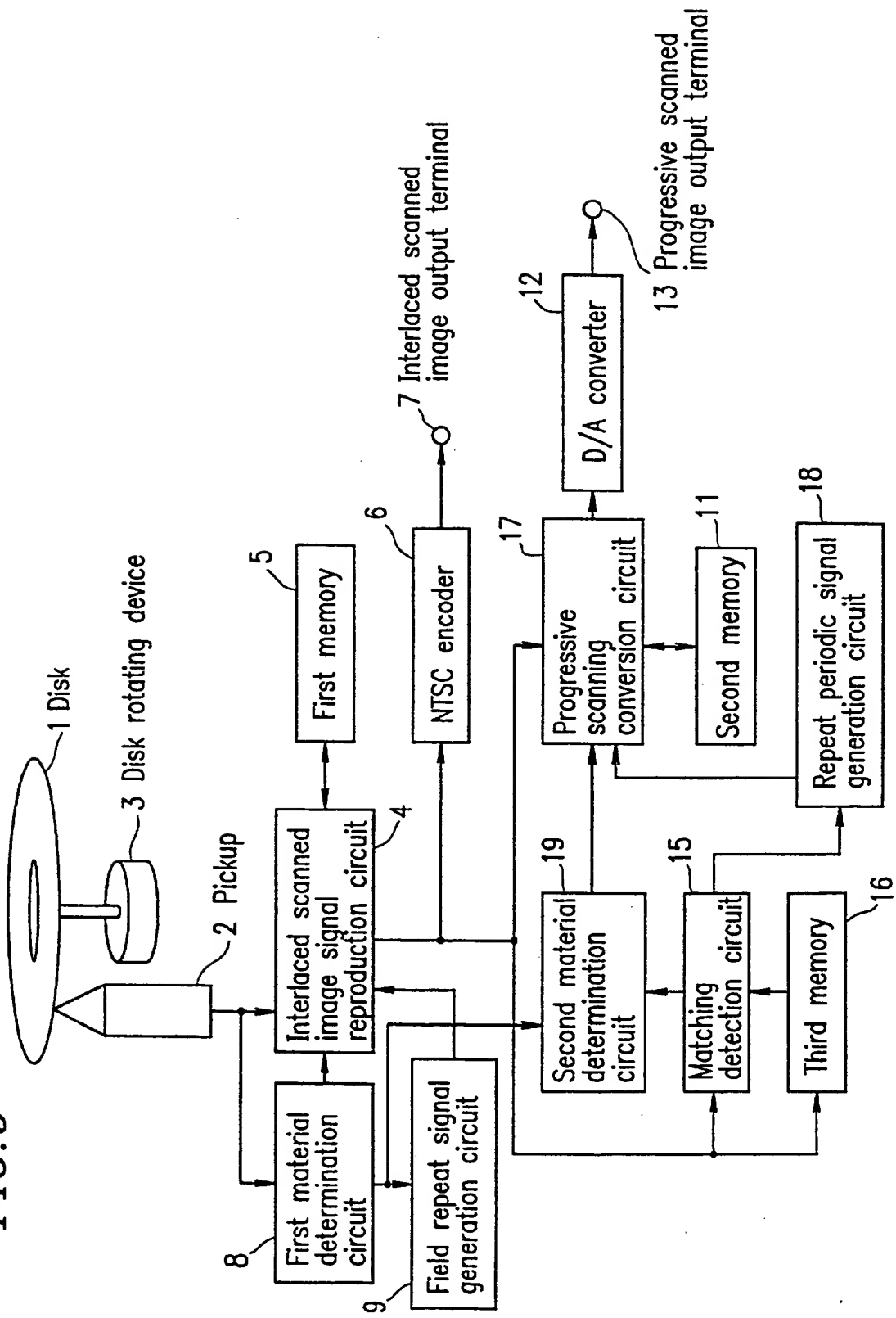

1 Disk
3 Disk rotating device
2 Pickup
Interlaced scanned image signal reproduction circuit
4
First memory
5
NTSC encoder
6
7 Interlaced scanned image output terminal
D/A converter
12
13 Progressive scanned image output terminal
Progressive scanning conversion circuit
17
Second memory
11
Repeat periodic signal generation circuit
18
First material determination circuit
8
Field repeat signal generation circuit
9
Second material determination circuit
19
Matching detection circuit
15
Third memory
16

FIG. 9

FIG. 10

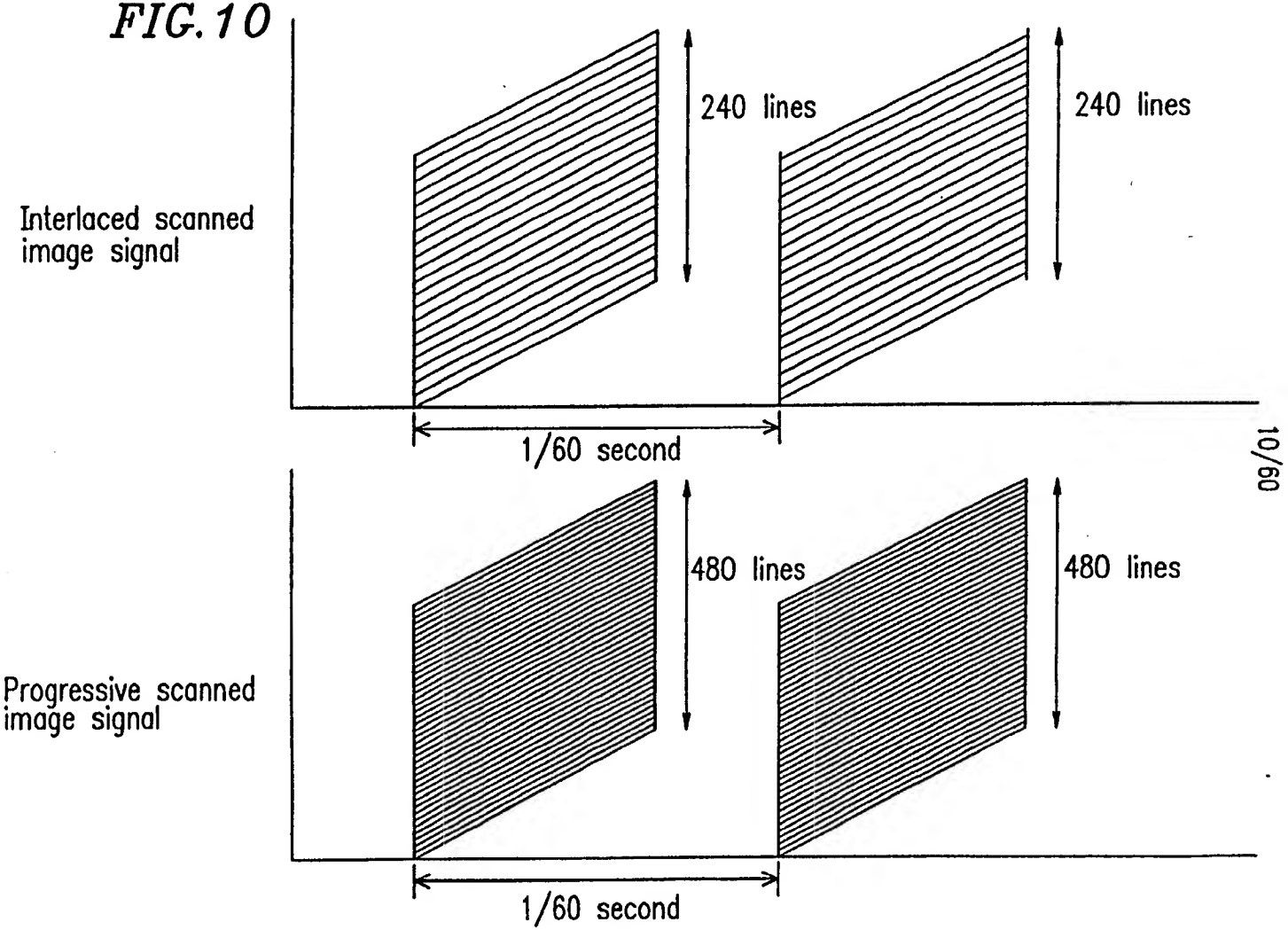

Interlaced scanned image signal
240 lines
240 lines
1/60 second
Progressive scanned image signal
480 lines
480 lines
1/60 second

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FIG. 11

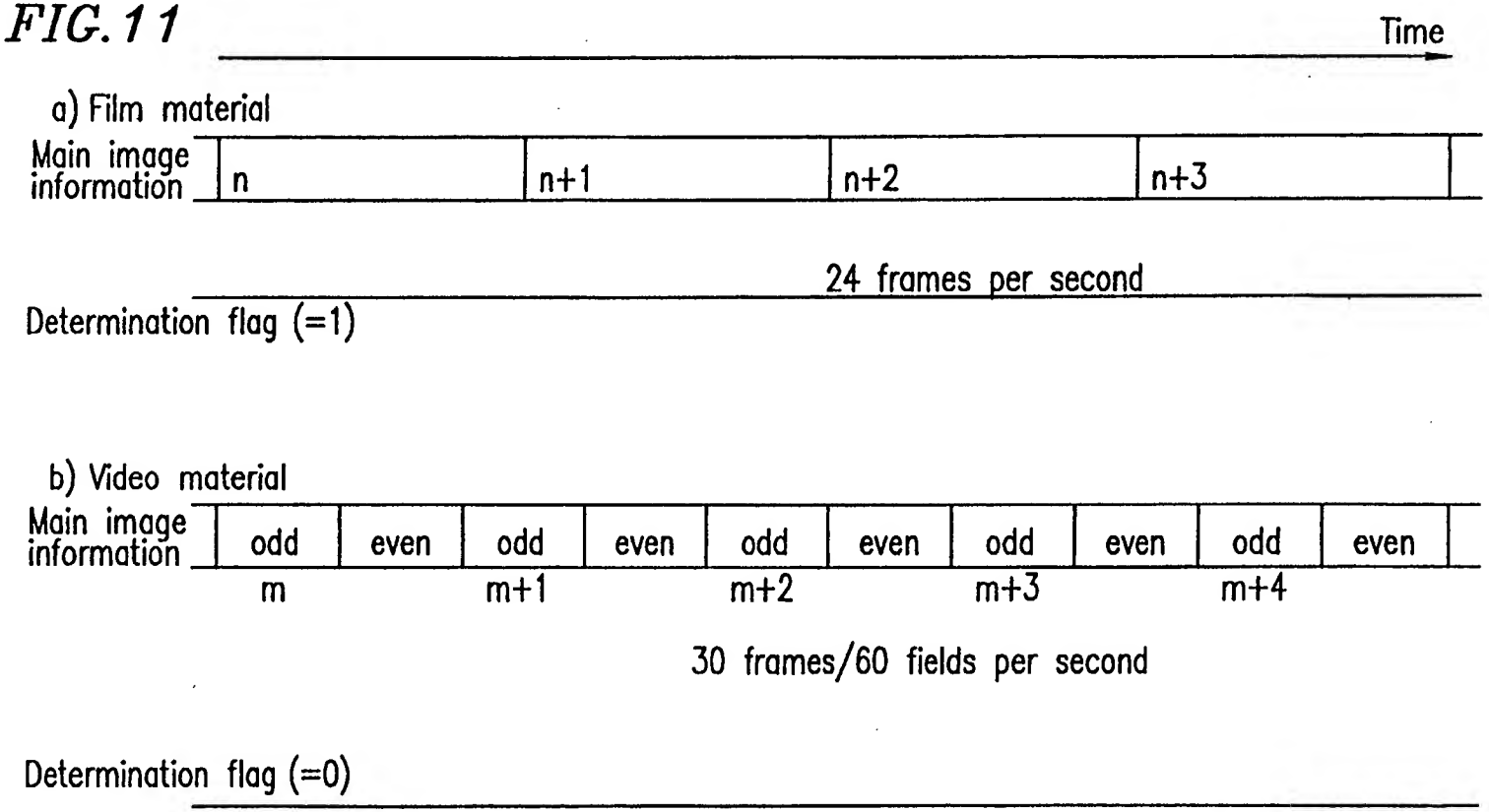

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FIG. 12

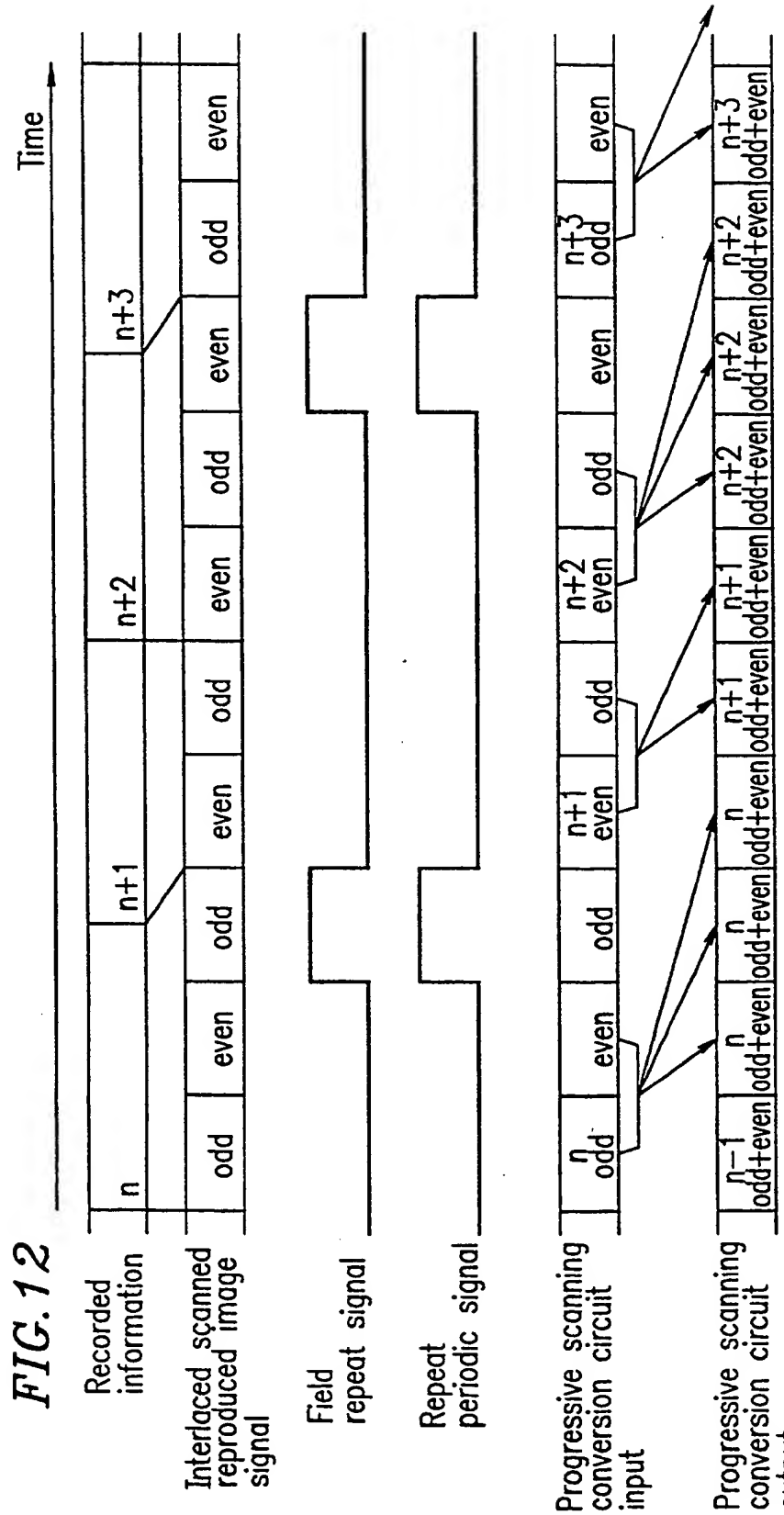
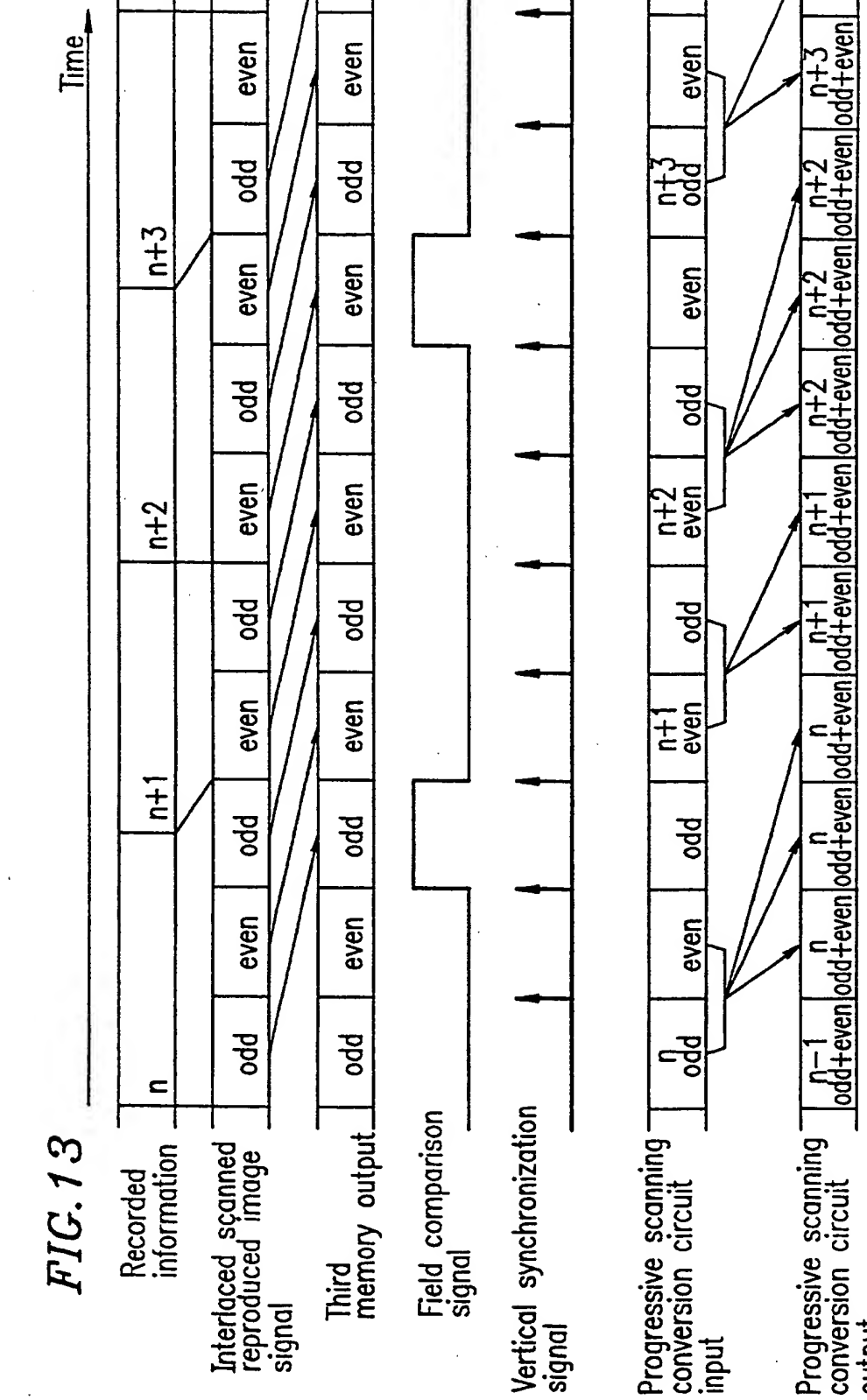

Time
Recorded information
n
n+1
n+2
n+3
Interlaced scanned reproduced image signal
odd
even
odd
even
odd
even
odd
even
Field repeat signal
Repeat periodic signal
Progressive scanning conversion circuit input
n odd
even
odd
n+1 even
odd
n+2 even
odd
n+3 odd
even
Progressive scanning conversion circuit output
n−1 odd+even
n odd+even
odd+even
n odd+even
odd+even
n+1 odd+even
odd+even
n+1 odd+even
odd+even
n+2 odd+even
odd+even
n+2 odd+even
odd+even
n+3 odd+even

FIG. 13


Time
Recorded information
n
n+1
n+2
n+3
Interlaced scanned reproduced image signal
odd
even
odd
even
odd
even
odd
even
Third memory output
odd
even
odd
even
odd
even
odd
even
Field comparison signal
Vertical synchronization signal
Progressive scanning conversion circuit input
n odd
even
odd
n+1 even
odd
n+2 even
odd
even
n+3 odd
even
Progressive scanning conversion circuit output
n−1 odd+even
n odd+even
n odd+even
n odd+even
n+1 odd+even
n+1 odd+even
n+2 odd+even
n+2 odd+even
n+2 odd+even
n+3 odd+even

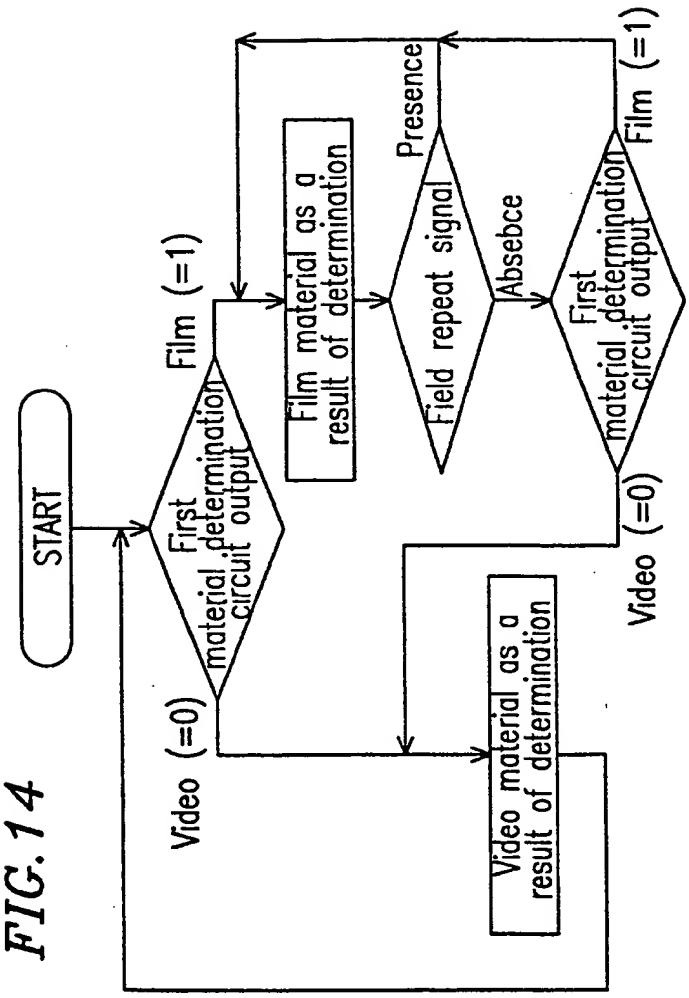

START
First material determination circuit output
Film (=1)
Video (=0)
Film material as a result of determination
Field repeat signal
Presence
Absebce
First material determination circuit output
Film (=1)
Video (=0)
Video material as a result of determination

FIG. 14

FIG. 15

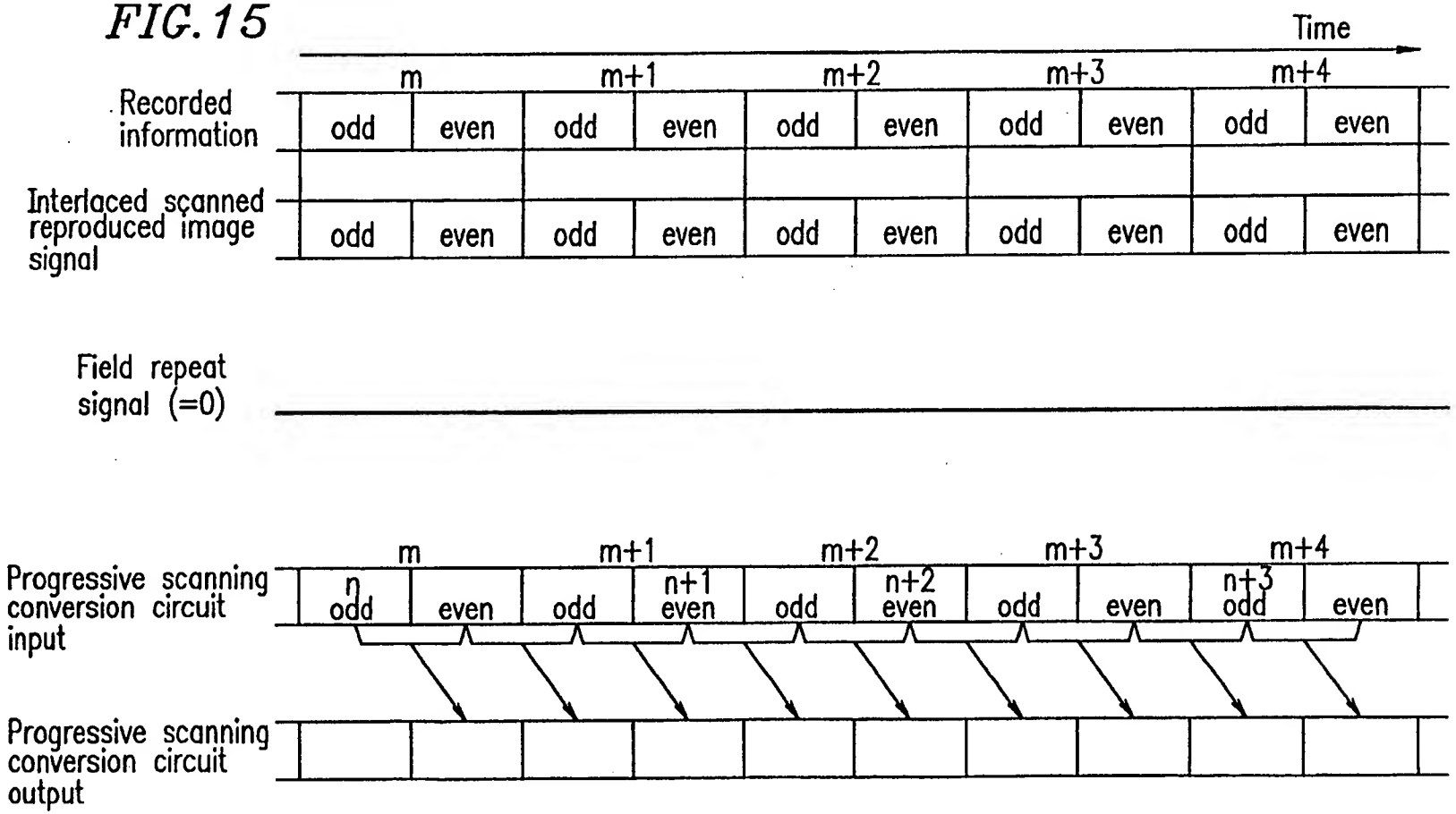


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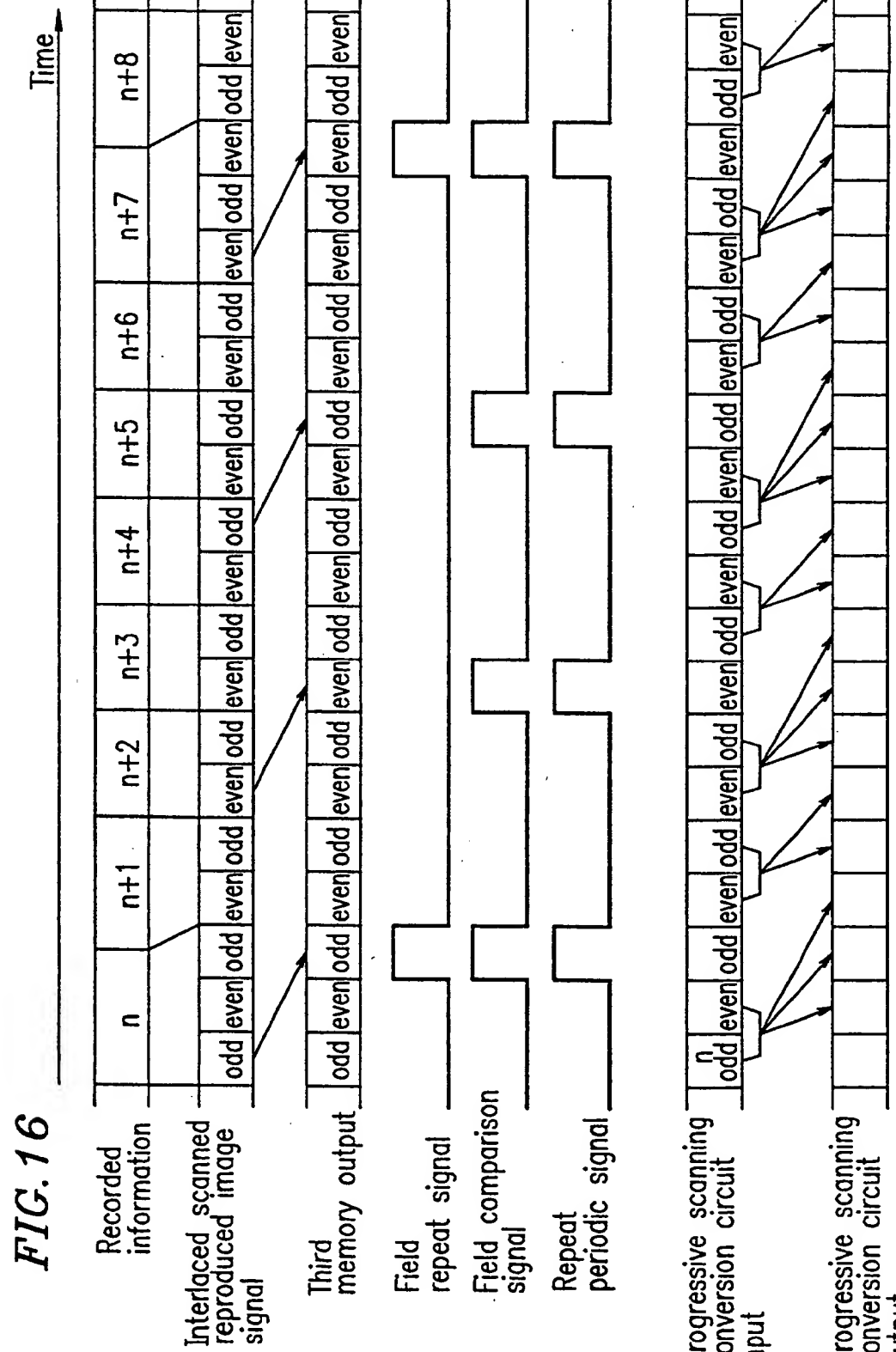
FIG. 16


Time
Recorded information
n
n+1
n+2
n+3
n+4
n+5
n+6
n+7
n+8
Interlaced scanned reproduced image signal
odd
even
Third memory output
Field repeat signal
Field comparison signal
Repeat periodic signal
Progressive scanning conversion circuit input
Progressive scanning conversion circuit output

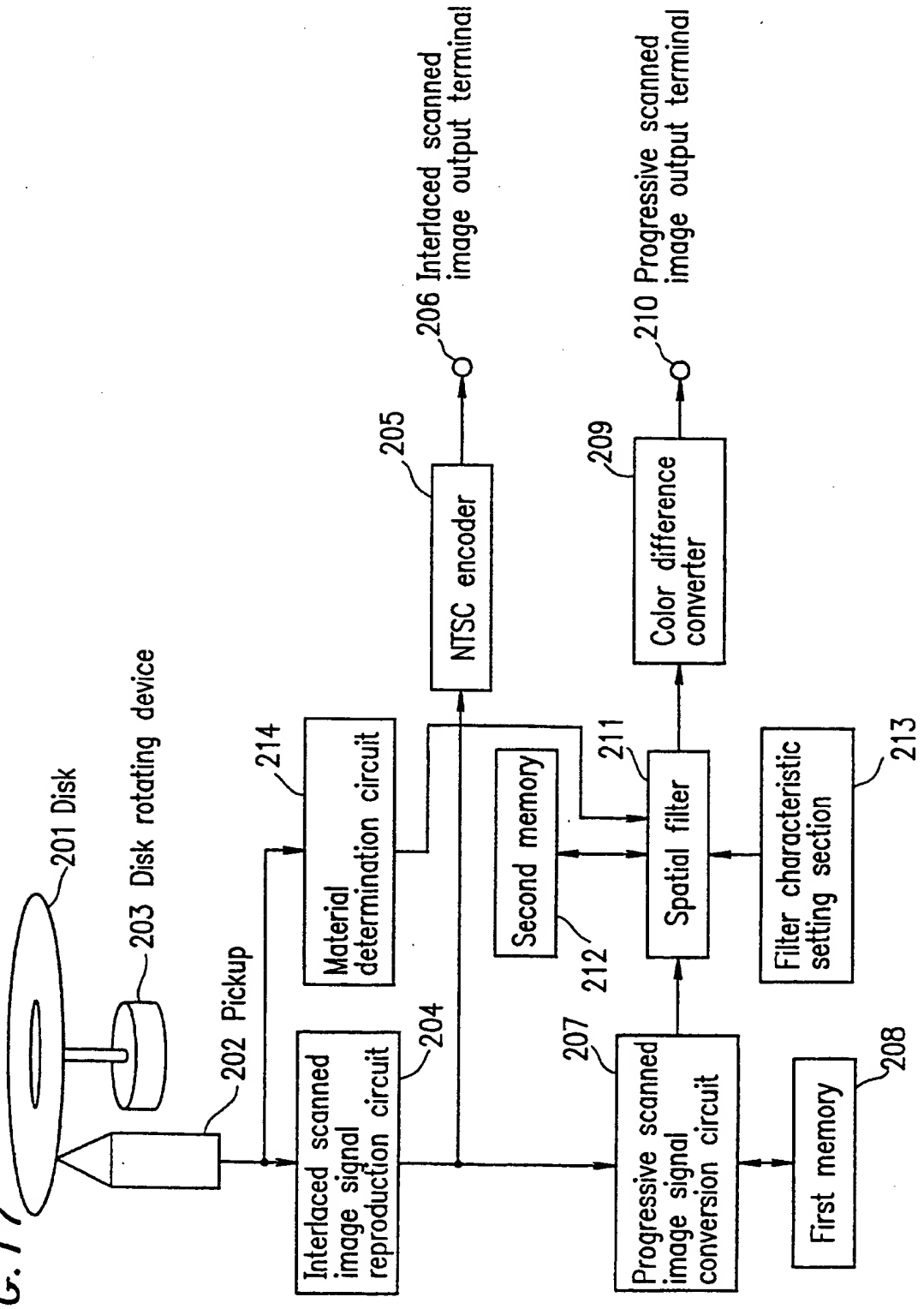

201 Disk
203 Disk rotating device
202 Pickup
214
Material determination circuit
204
Interlaced scanned image signal reproduction circuit
205
NTSC encoder
206 Interlaced scanned image output terminal
Second memory
212
211
Spatial filter
Filter characteristic setting section
213
209
Color difference converter
210 Progressive scanned image output terminal
207
Progressive scanned image signal conversion circuit
First memory
208

FIG. 17

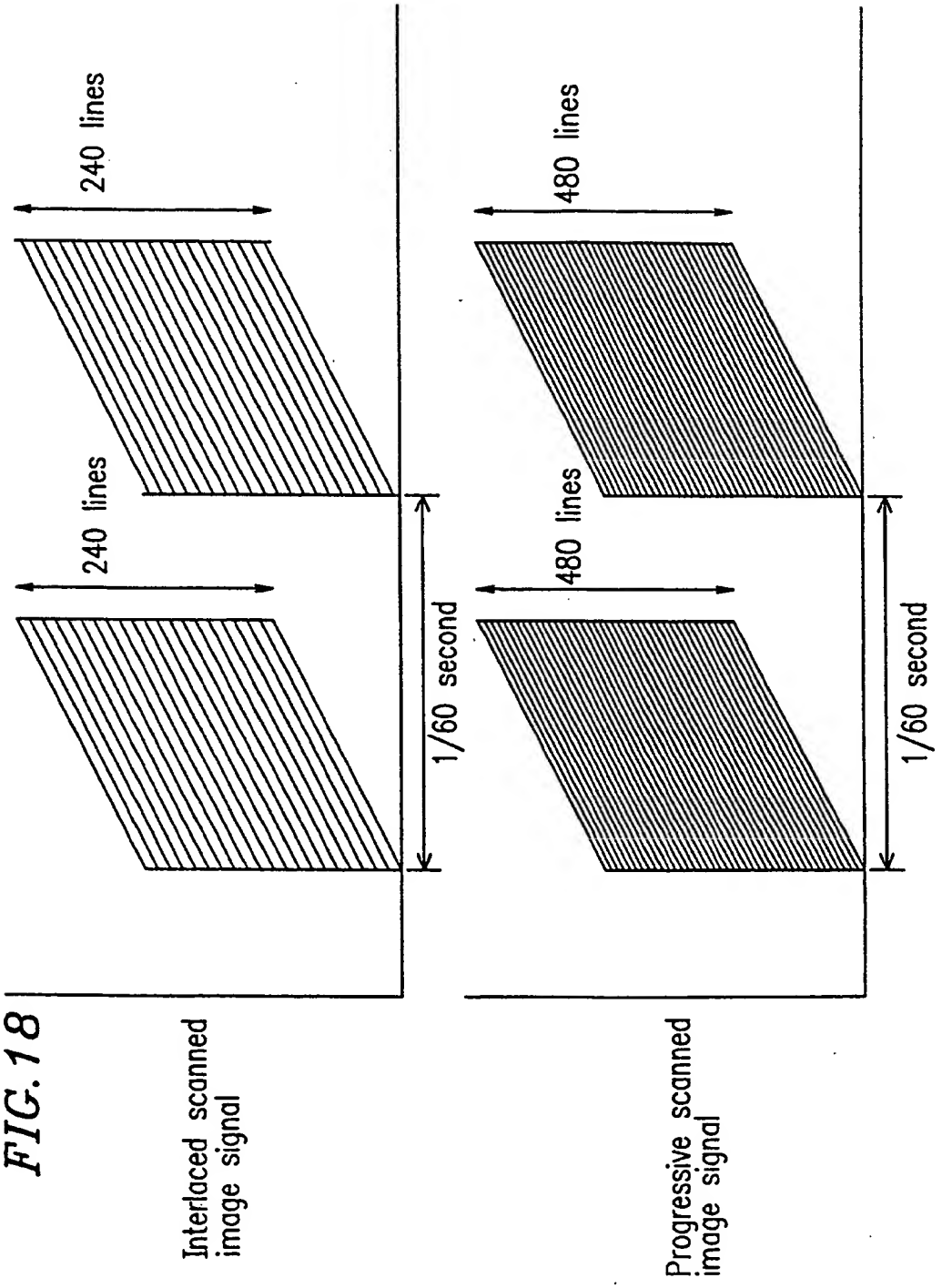
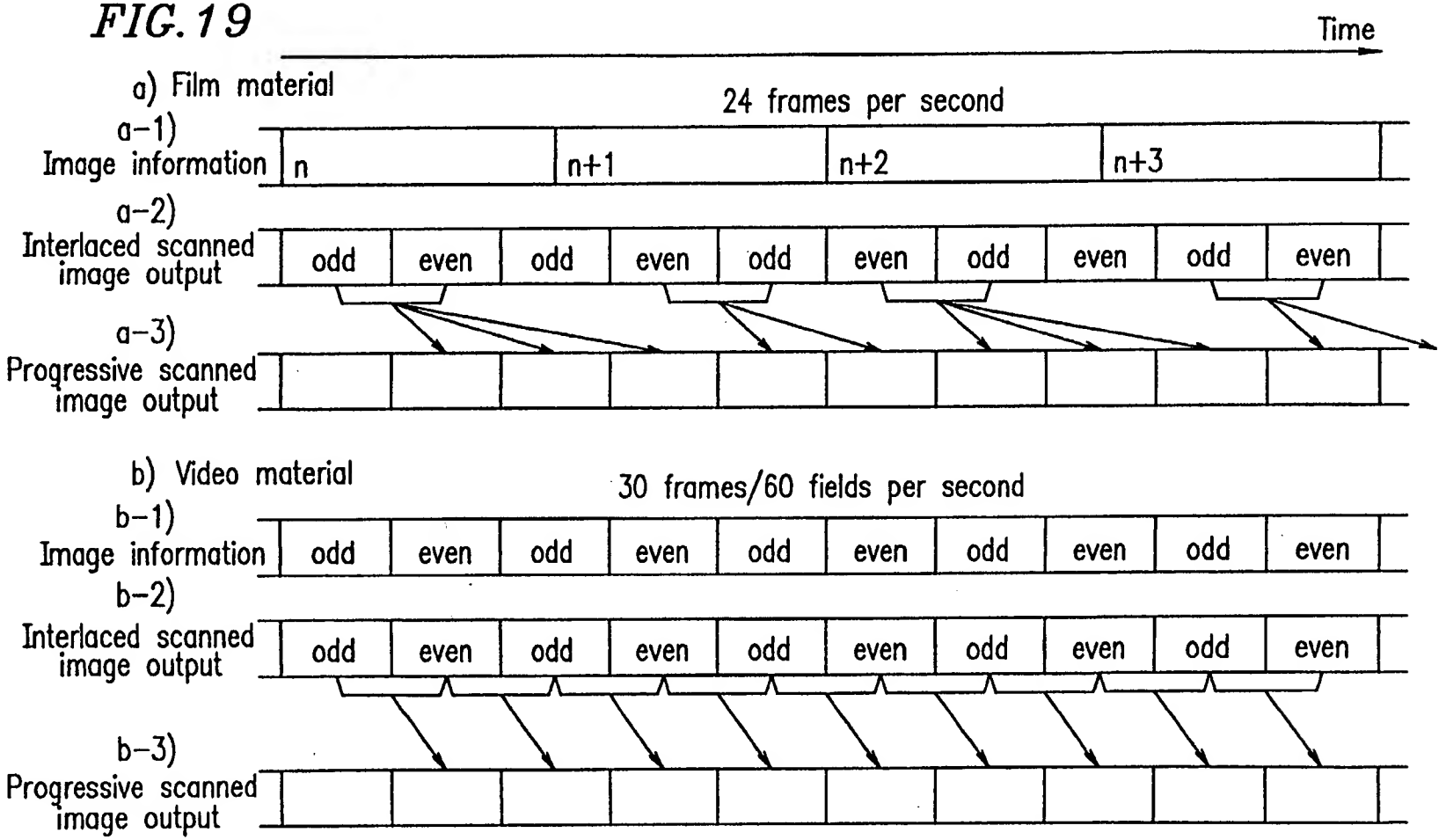

240 lines
240 lines
1/60 second
Interlaced scanned image signal
480 lines
480 lines
1/60 second
Progressive scanned image signal

FIG. 18

FIG. 19



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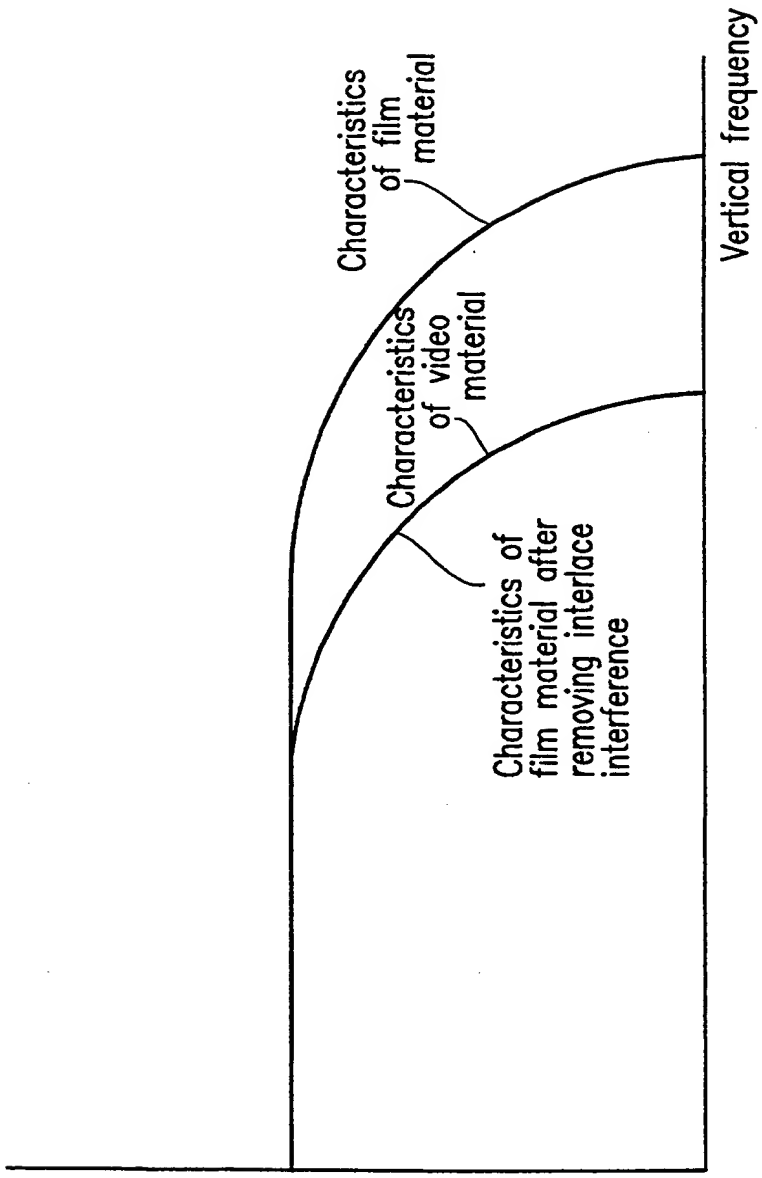
Gain
0dB
Vertical frequency
Characteristics of film material
Characteristics of video material
Characteristics of film material after removing interlace interference

FIG. 20

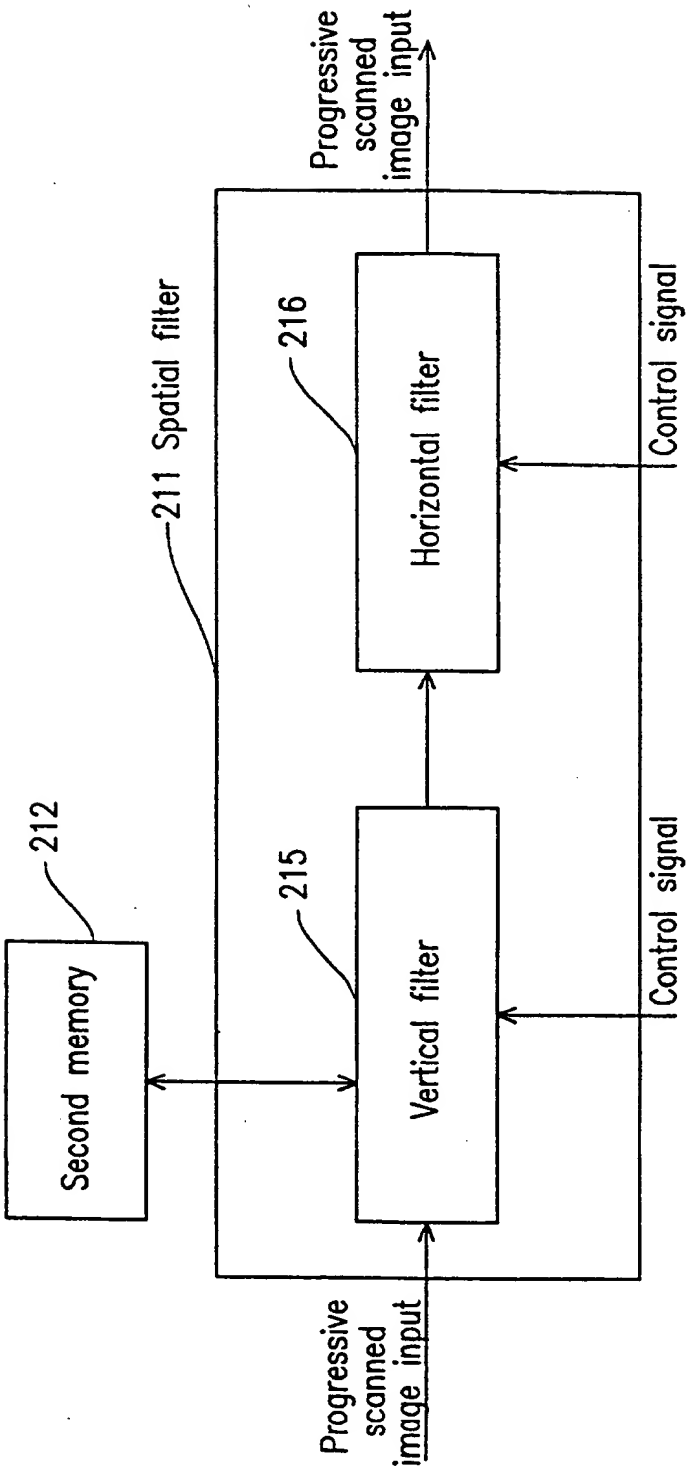
Progressive scanned image input
211 Spatial filter
216
Horizontal filter
Control signal
212
215
Second memory
Vertical filter
Control signal
Progressive scanned image input

FIG.21

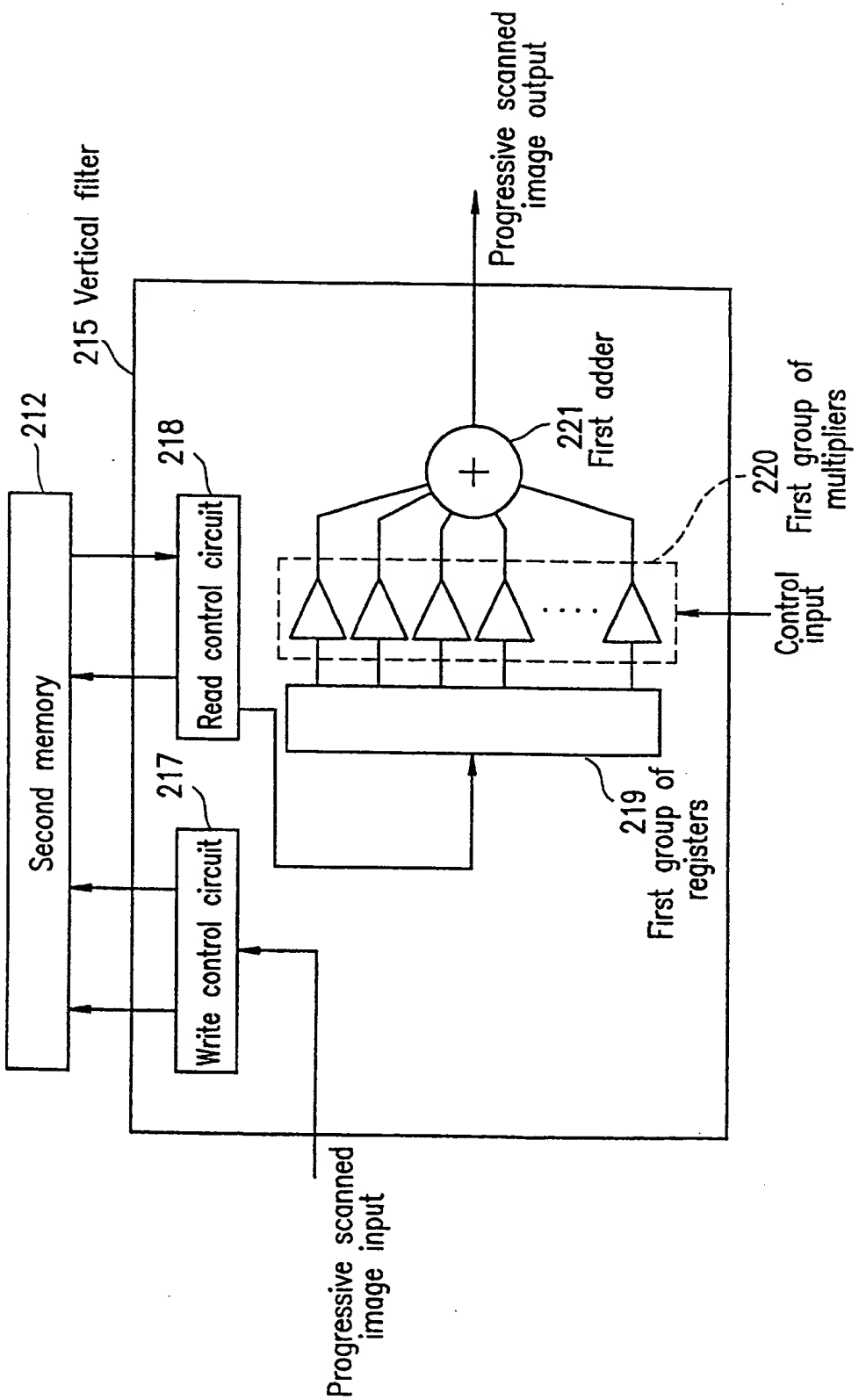
215 Vertical filter
212
Second memory
218
Read control circuit
217
Write control circuit
Progressive scanned image input
Progressive scanned image output
221
First adder
220
First group of multipliers
Control input
219
First group of registers

FIG.22

JP020319 26.05.2000

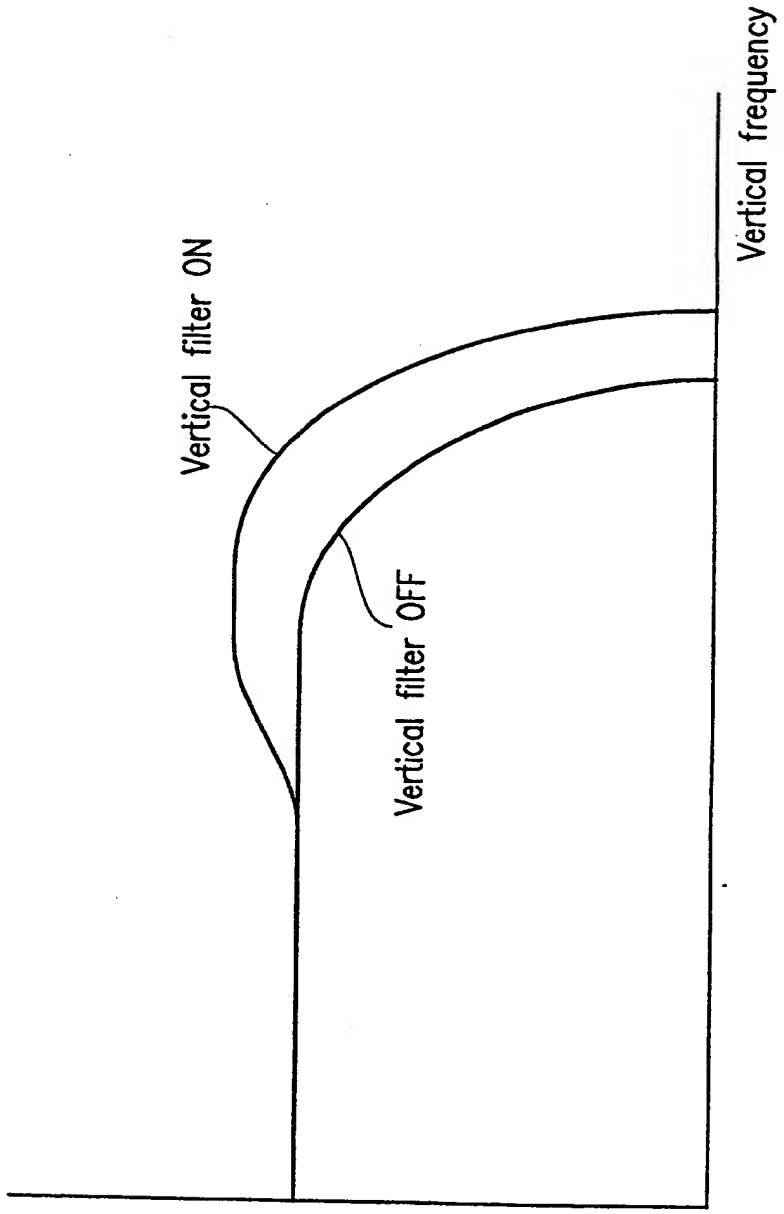

FIG.23

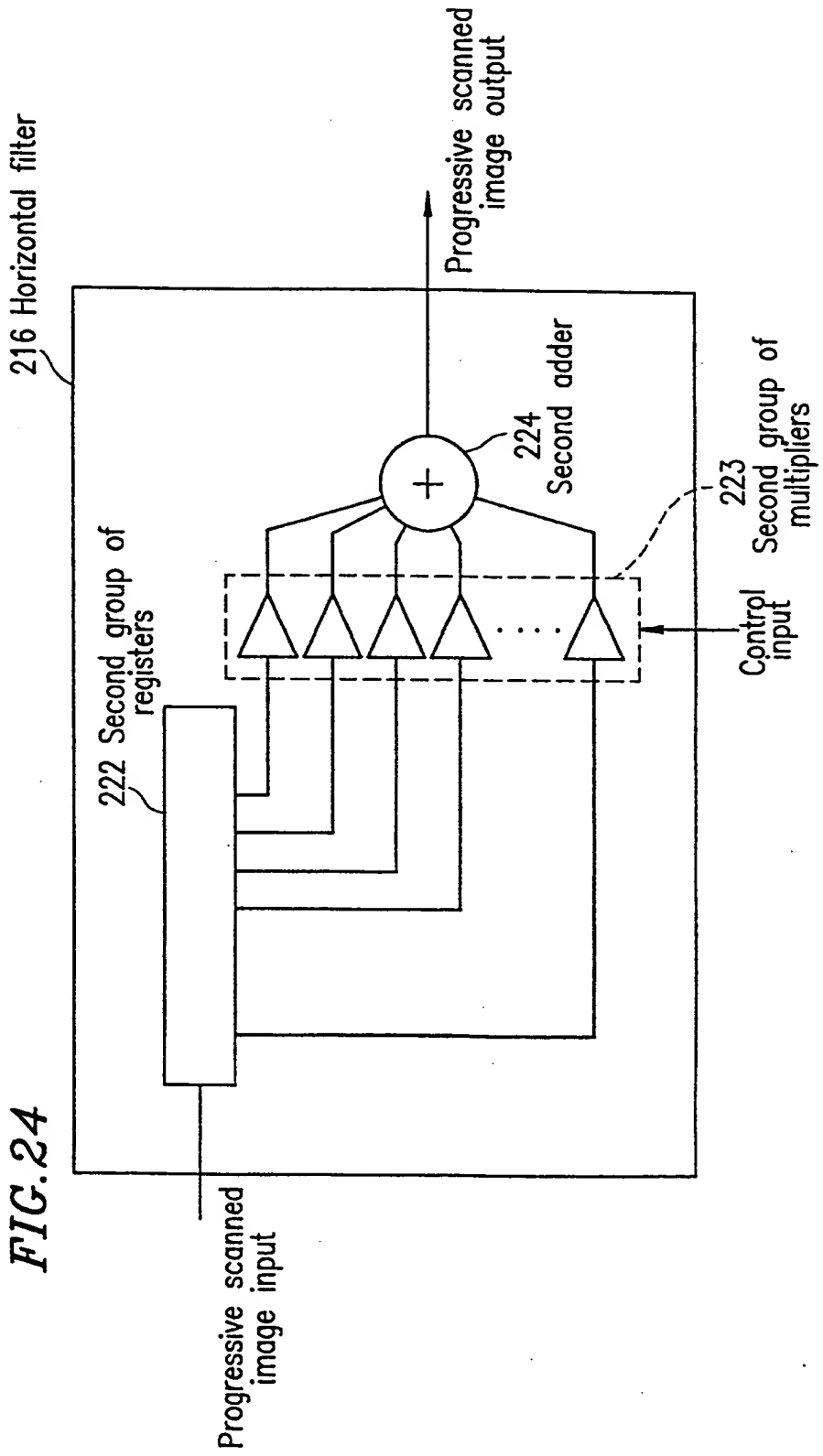
216 Horizontal filter
Progressive scanned image output
224 Second adder
223 Second group of multipliers
Control input
222 Second group of registers
Progressive scanned image input

FIG. 24

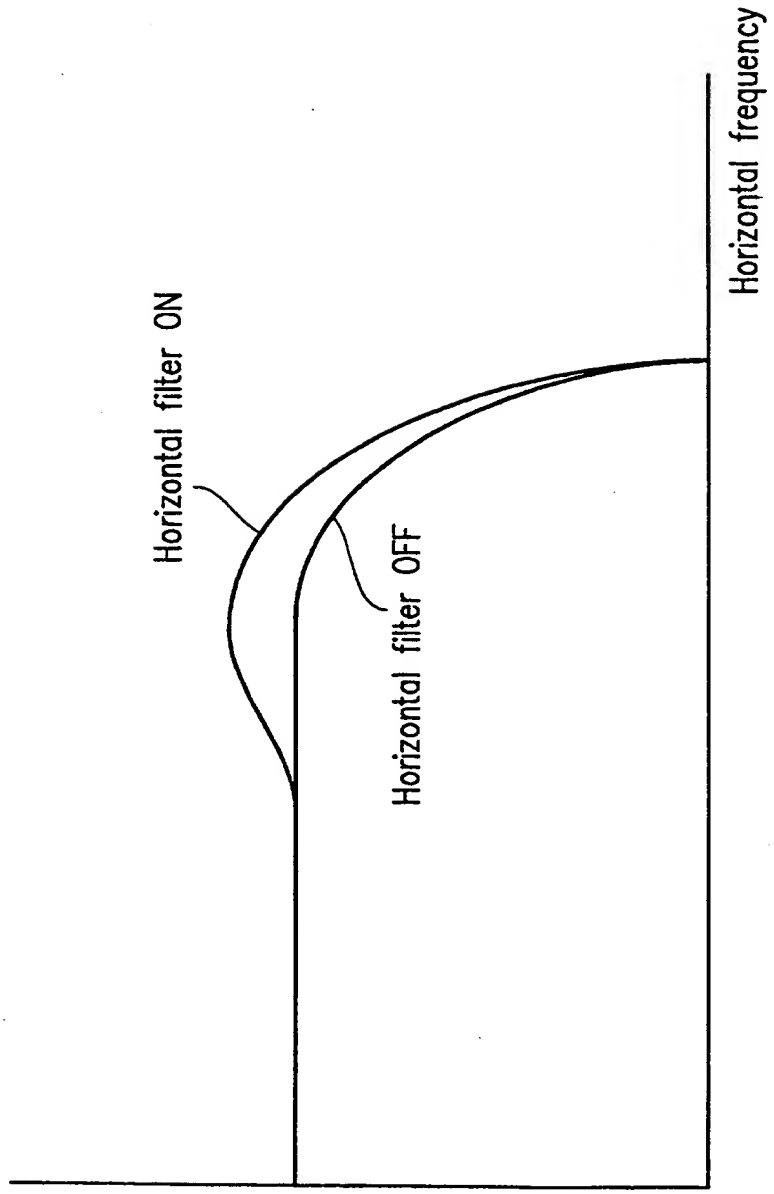
Horizontal frequency
Horizontal filter ON
Horizontal filter OFF
Gain
0dB

FIG.25

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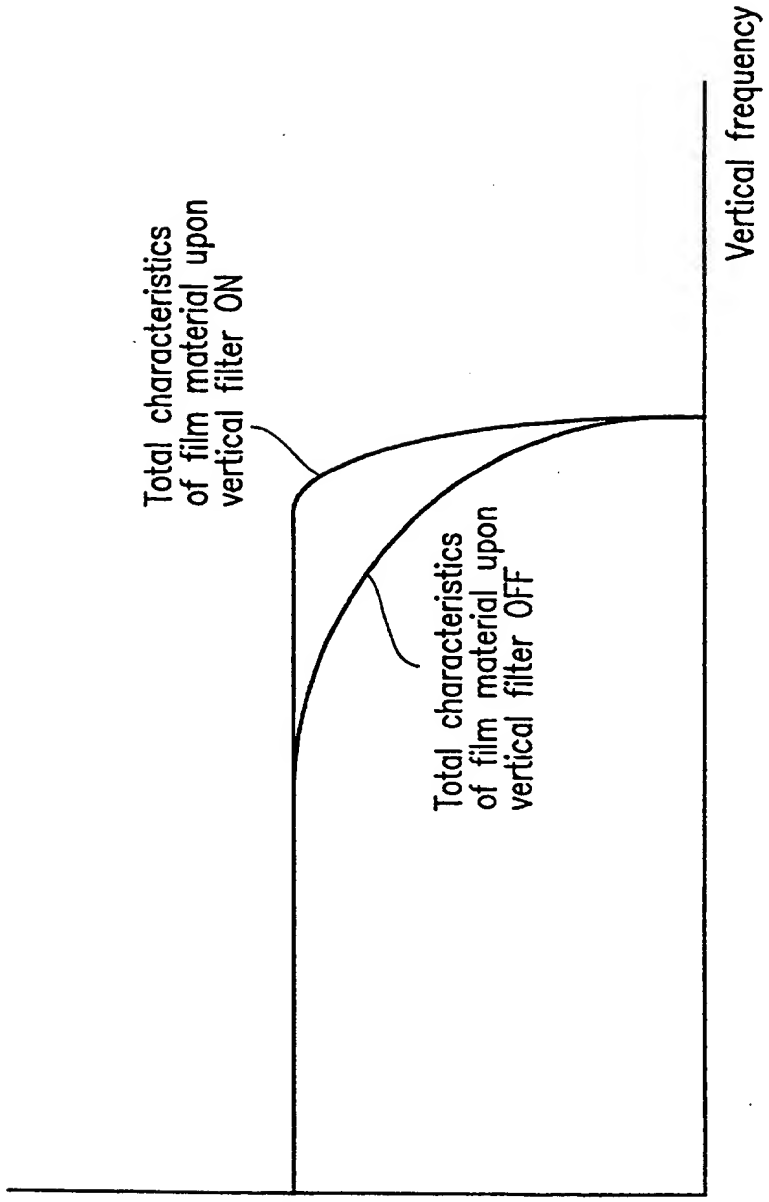


FIG. 26

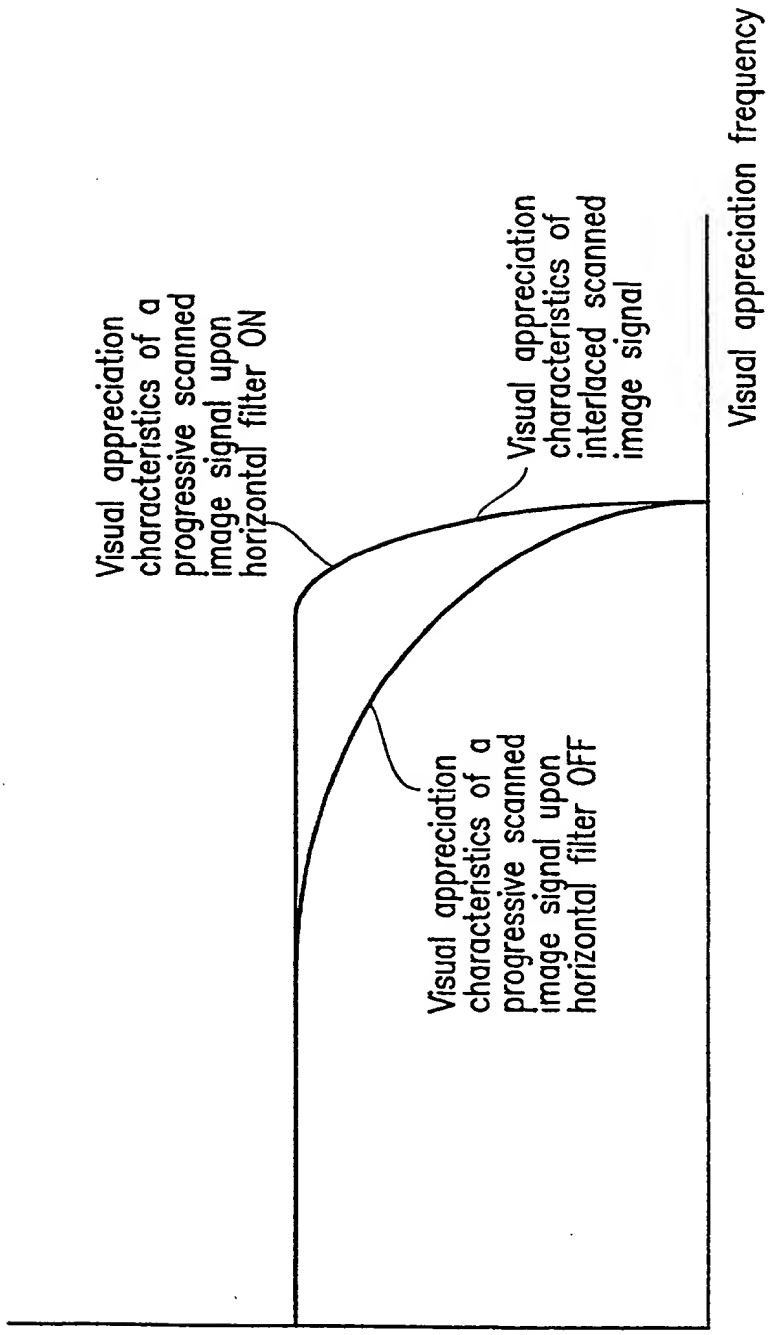
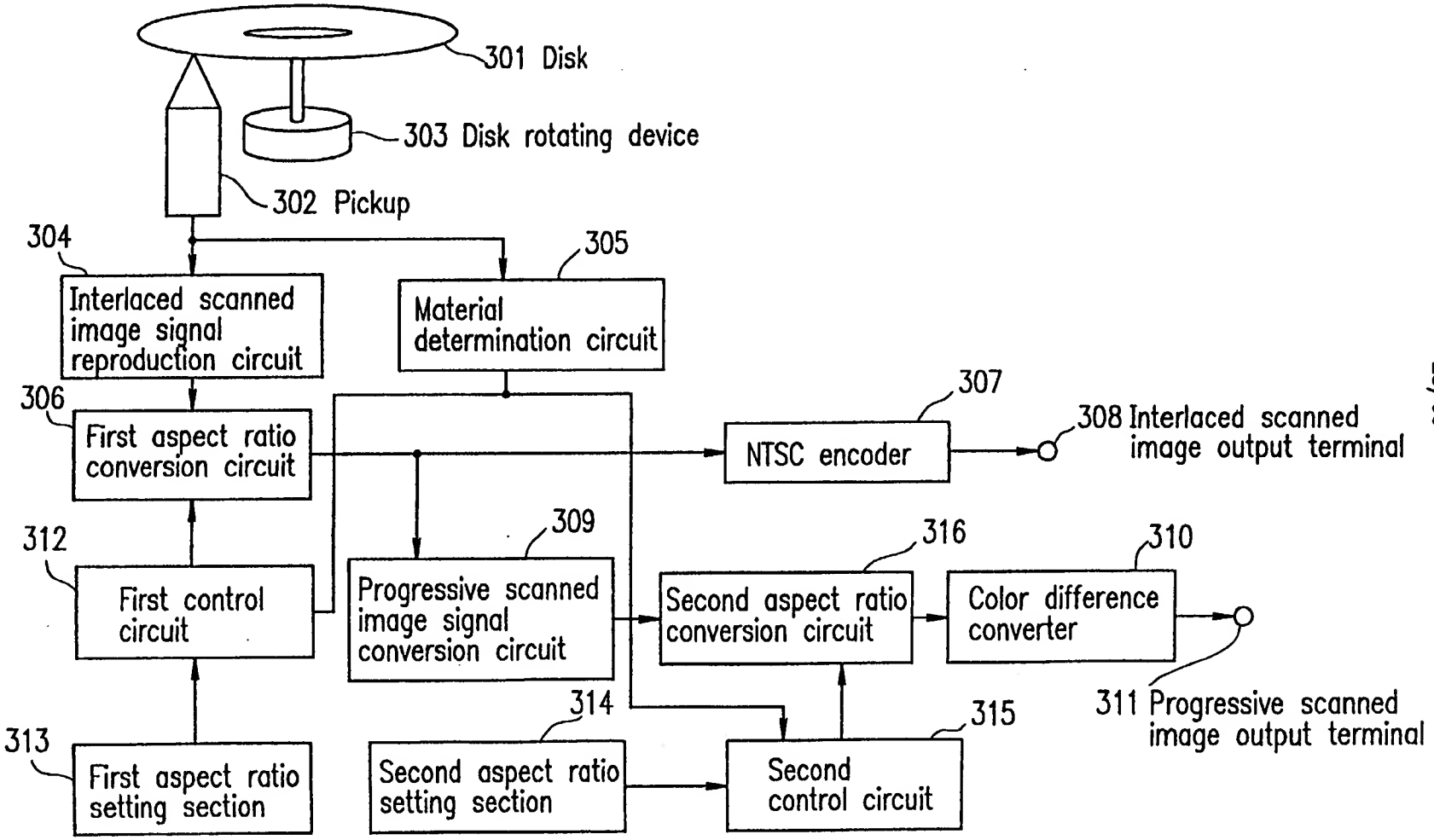

Visual appreciation characteristics of a progressive scanned image signal upon horizontal filter ON
Visual appreciation characteristics of interlaced scanned image signal
Visual appreciation characteristics of a progressive scanned image signal upon horizontal filter OFF
Visual appreciation frequency
Gain
0dB

FIG.27

FIG.28



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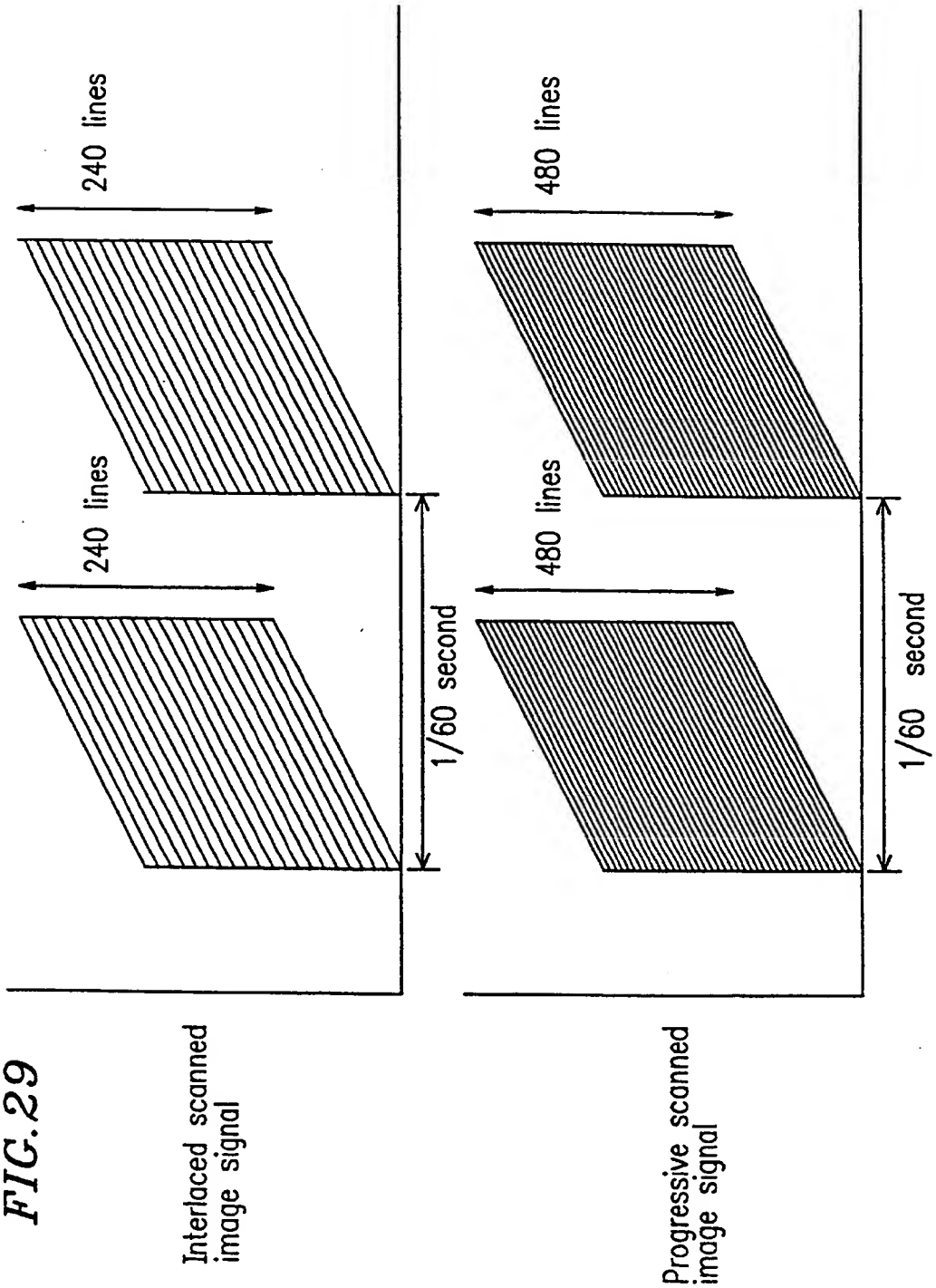
240 lines
240 lines
1/60 second
Interlaced scanned image signal
480 lines
480 lines
1/60 second
Progressive scanned image signal

FIG. 29

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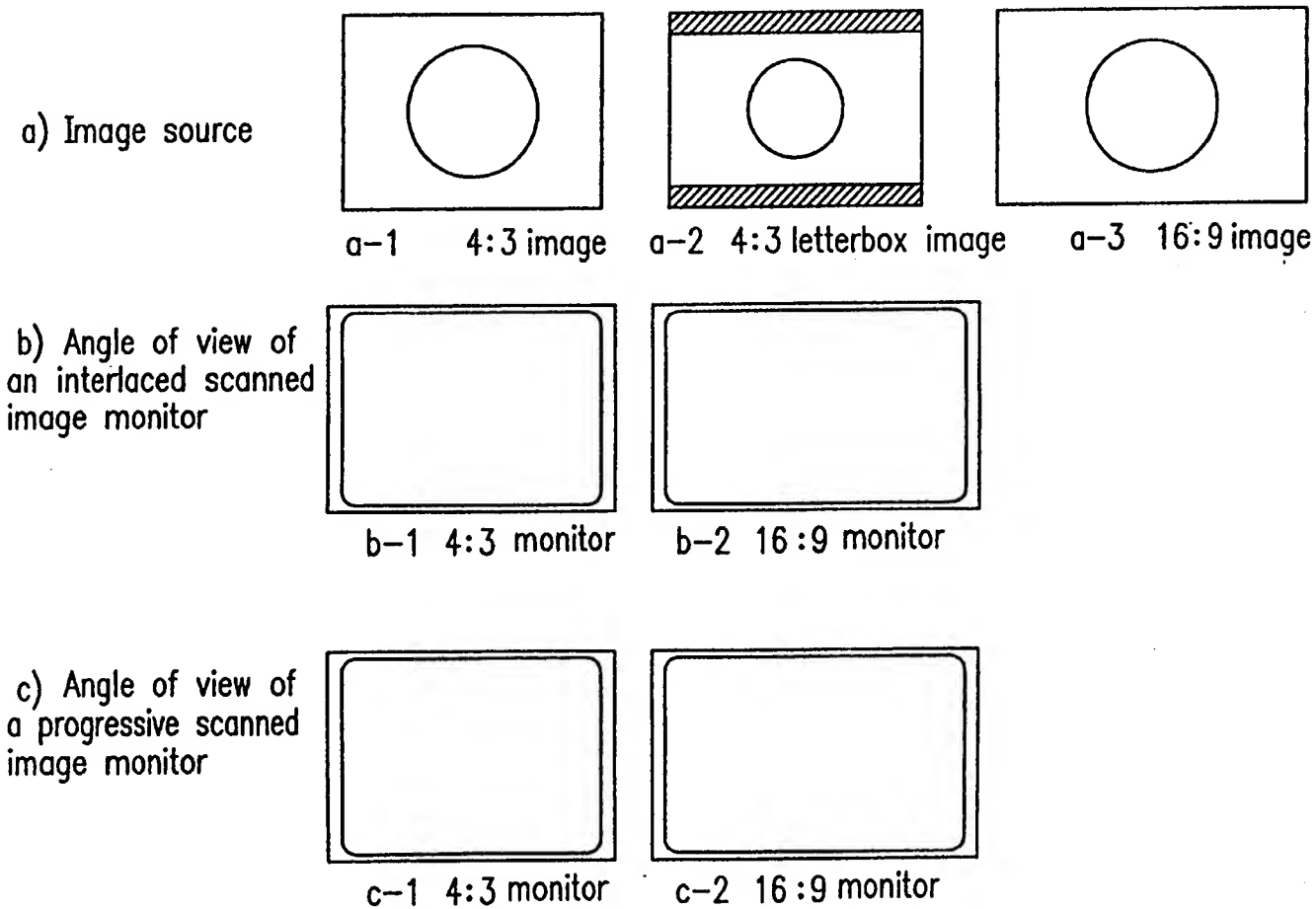
FIG.30



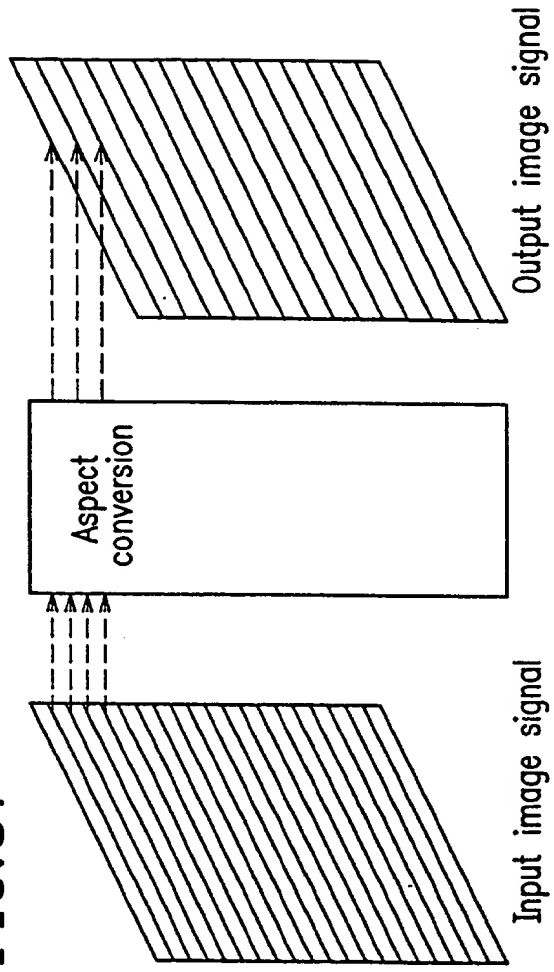


FIG.31

FIG. 32

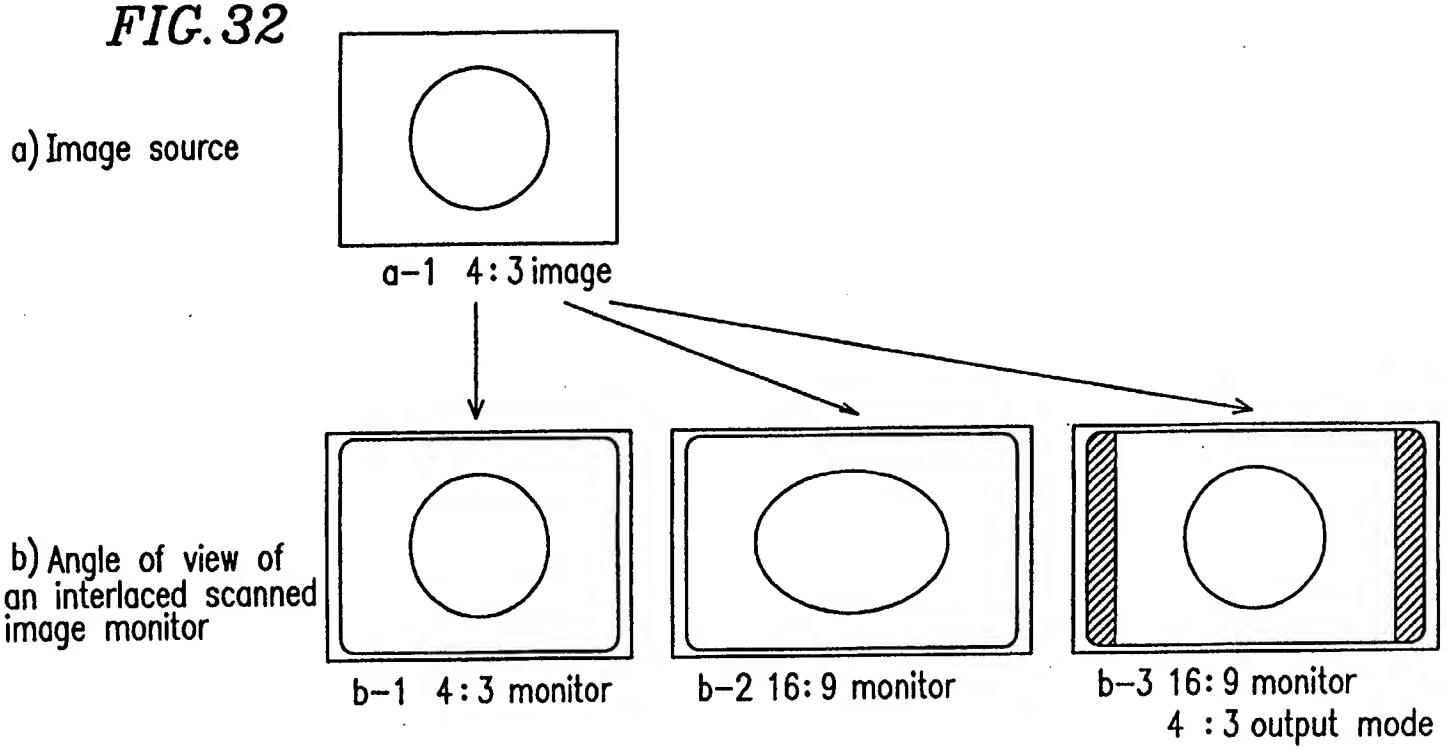

a) Image source
a-1 4:3 image
b) Angle of view of an interlaced scanned image monitor
b-1 4:3 monitor
b-2 16:9 monitor
b-3 16:9 monitor
4 :3 output mode

FIG.33

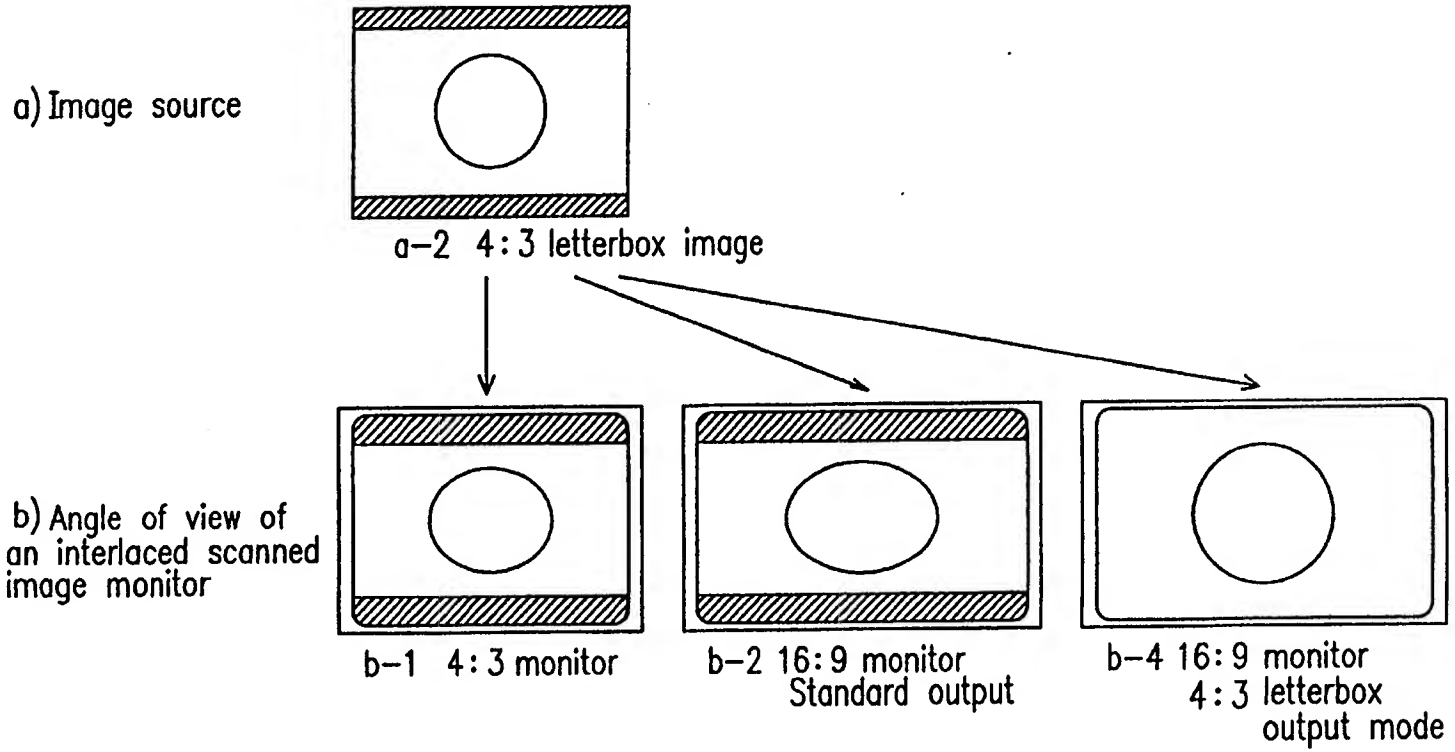


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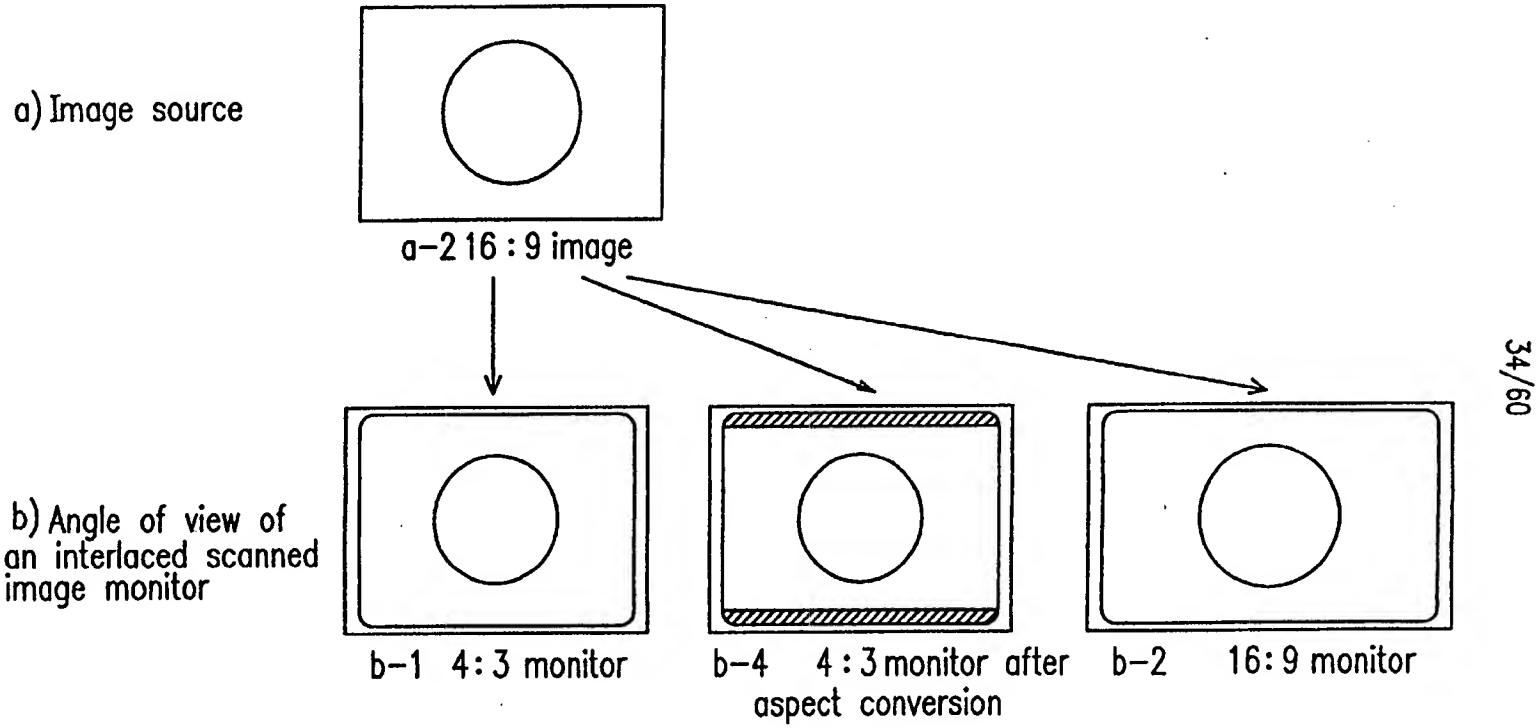
FIG. 34



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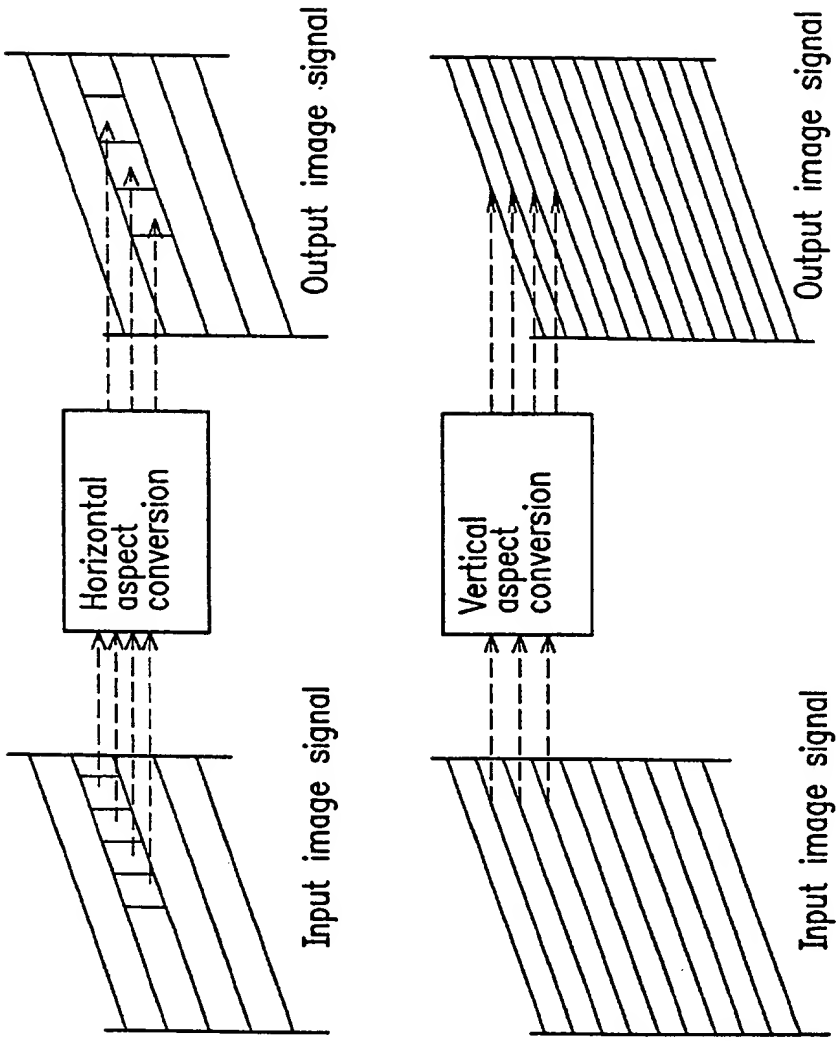
Output image signal
Horizontal aspect conversion
Input image signal
Output image signal
Vertical aspect conversion
Input image signal

FIG. 35

FIG. 36

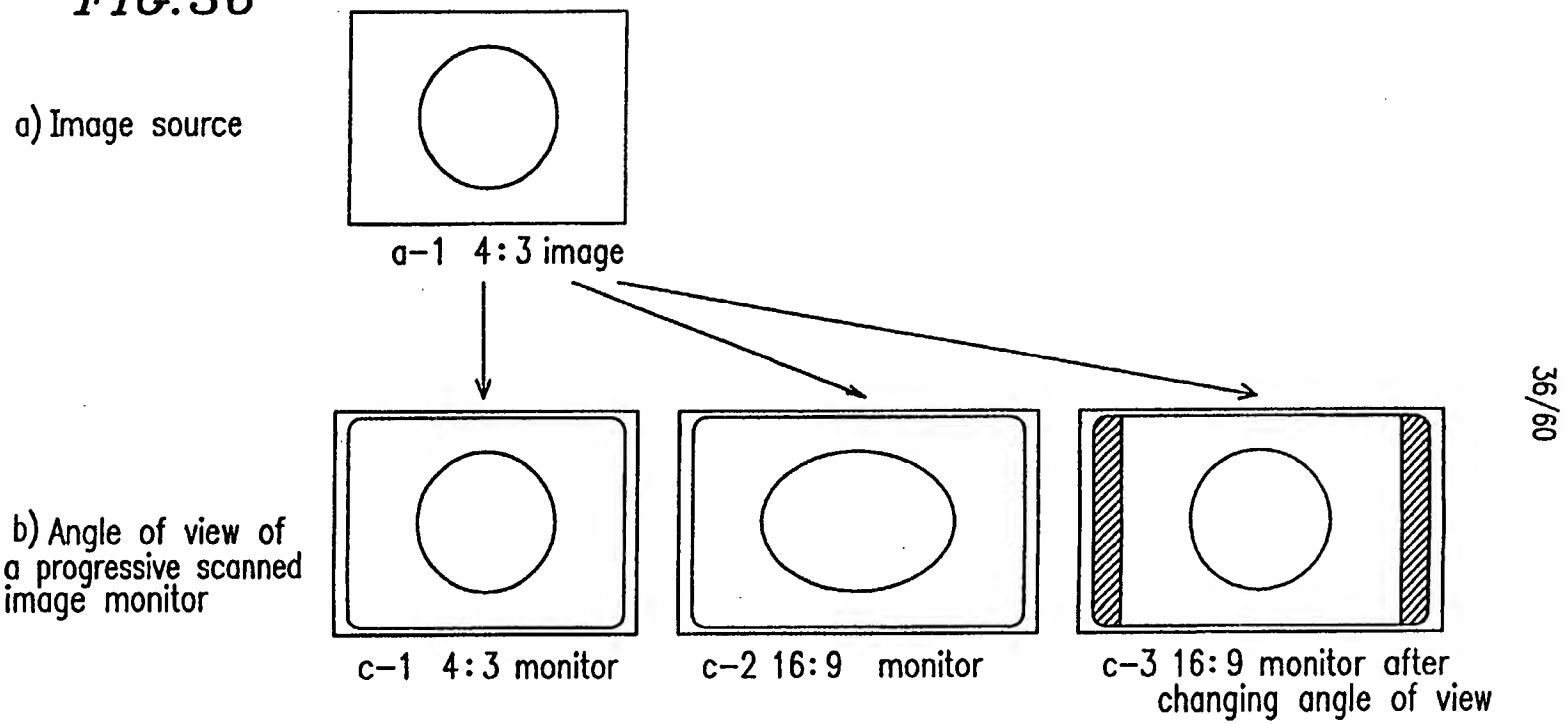
a) Image source
a-1 4:3 image
b) Angle of view of a progressive scanned image monitor
c-1 4:3 monitor
c-2 16:9 monitor
c-3 16:9 monitor after changing angle of view

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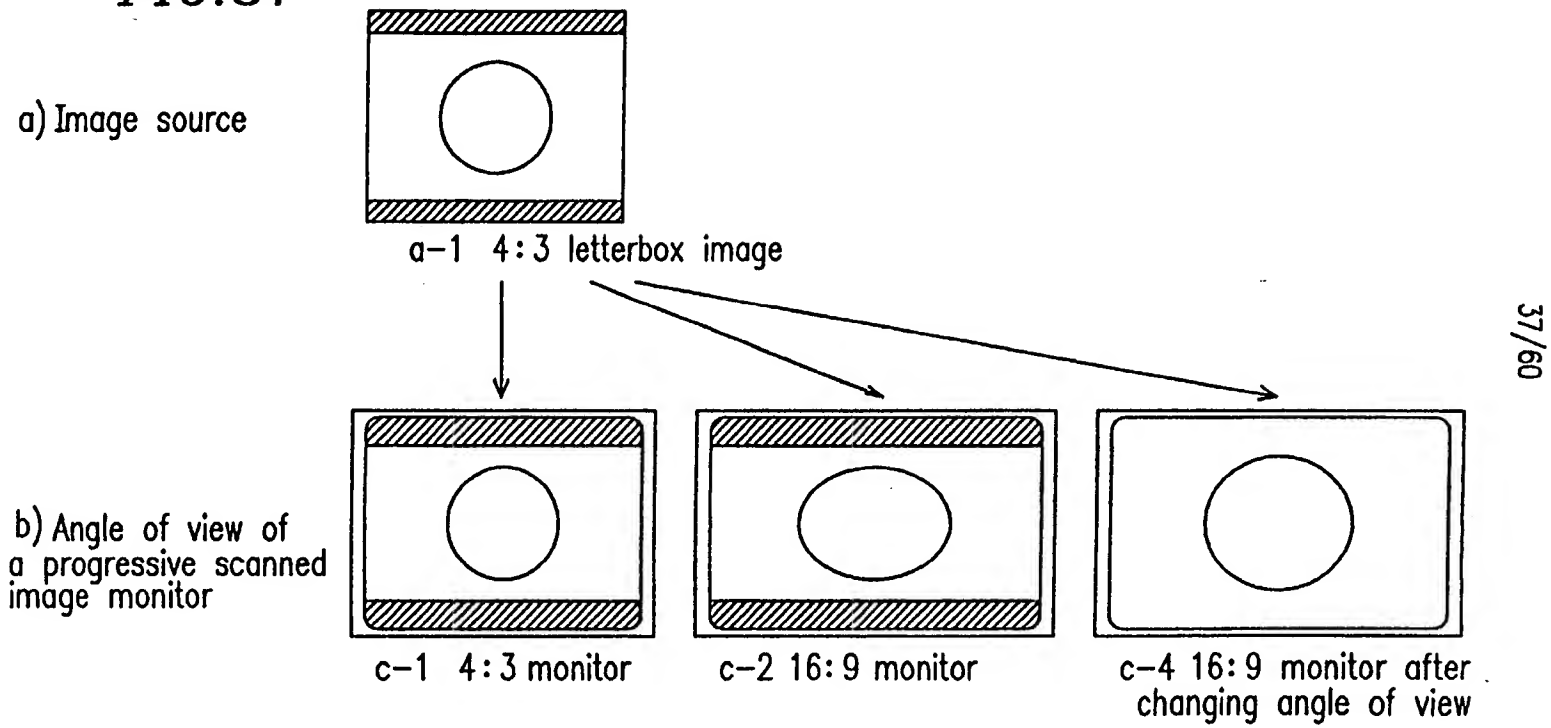
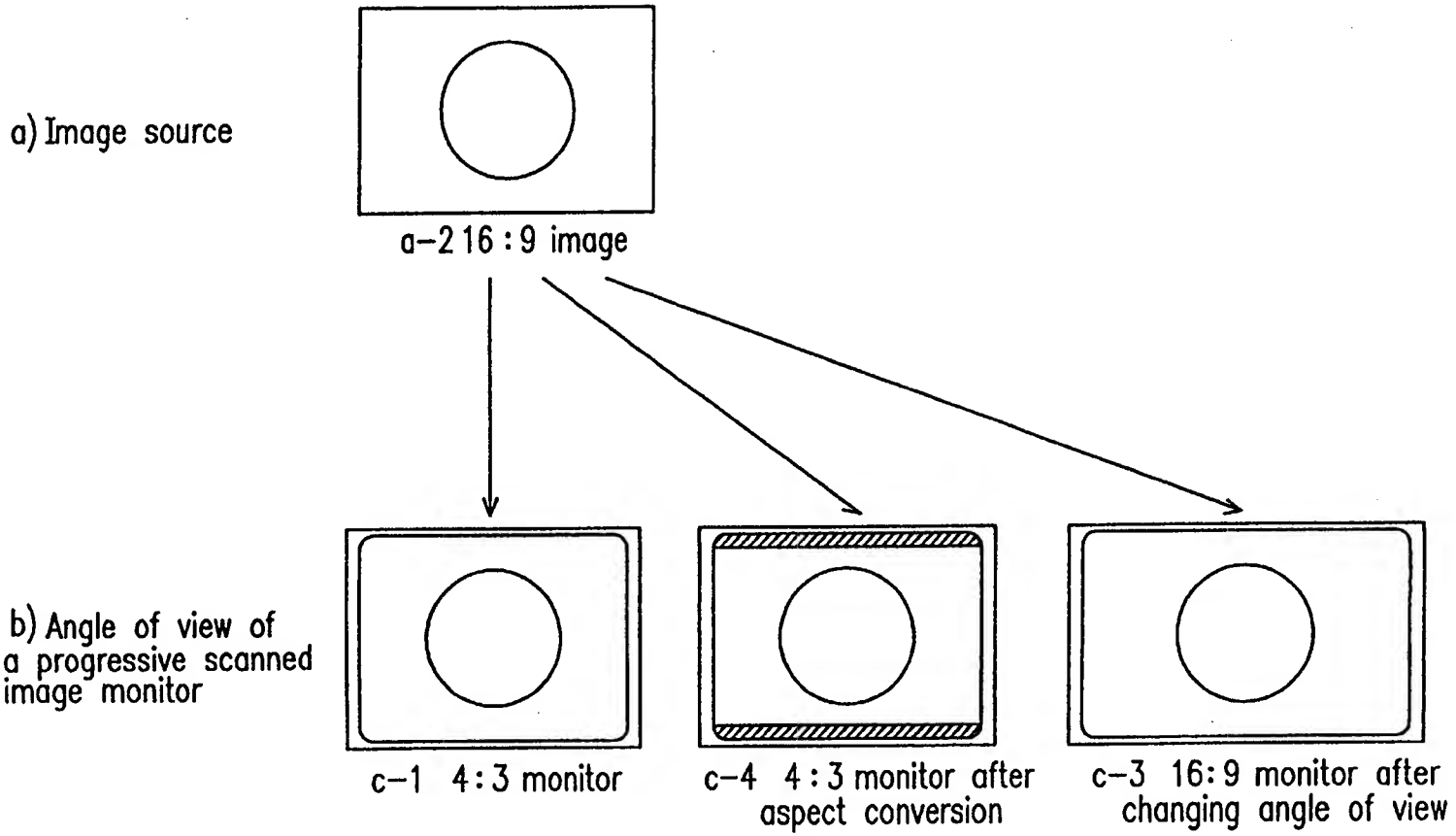
FIG.37



96069860

FIG. 38


a) Image source
a-2 16 : 9 image
b) Angle of view of a progressive scanned image monitor
c-1 4 : 3 monitor
c-4 4 : 3 monitor after aspect conversion
c-3 16: 9 monitor after changing angle of view

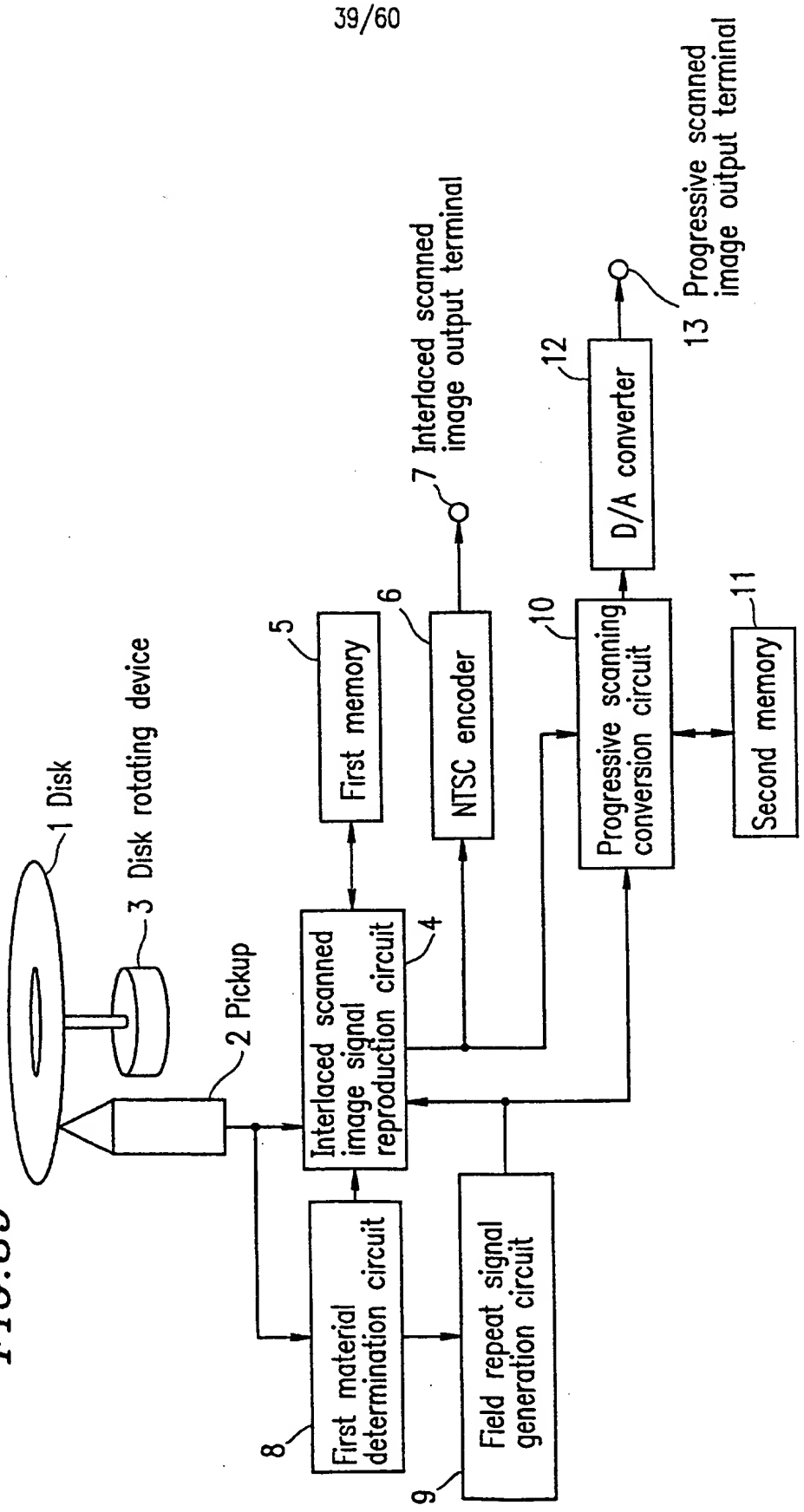

1 Disk
3 Disk rotating device
2 Pickup
Interlaced scanned image signal reproduction circuit
4
5
First memory
6
NTSC encoder
7 Interlaced scanned image output terminal
10
Progressive scanning conversion circuit
12
D/A converter
13 Progressive scanned image output terminal
11
Second memory
8
First material determination circuit
9
Field repeat signal generation circuit

FIG. 39

FIG. 40

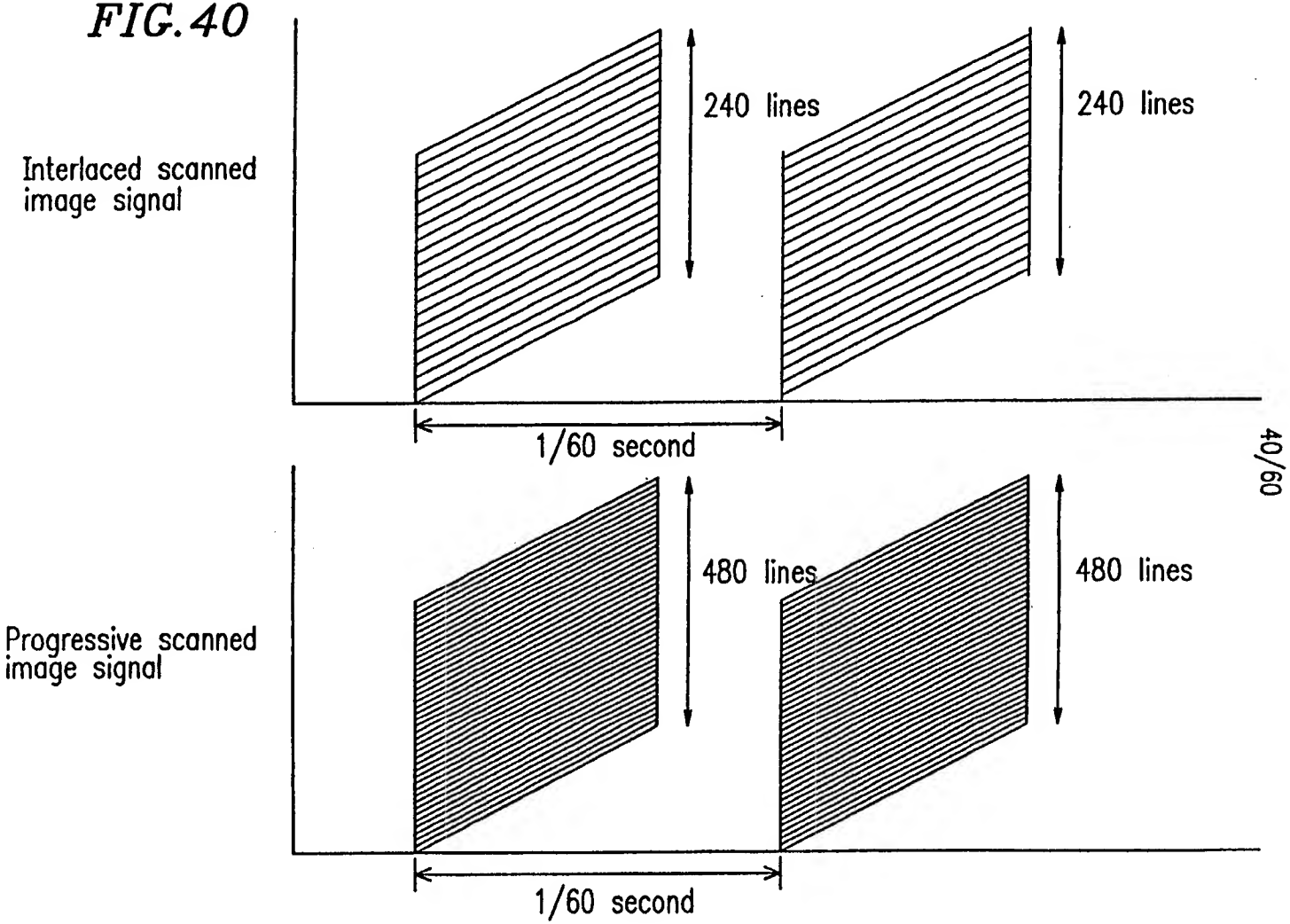

Interlaced scanned image signal
240 lines
240 lines
1/60 second
Progressive scanned image signal
480 lines
480 lines
1/60 second

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FIG. 41

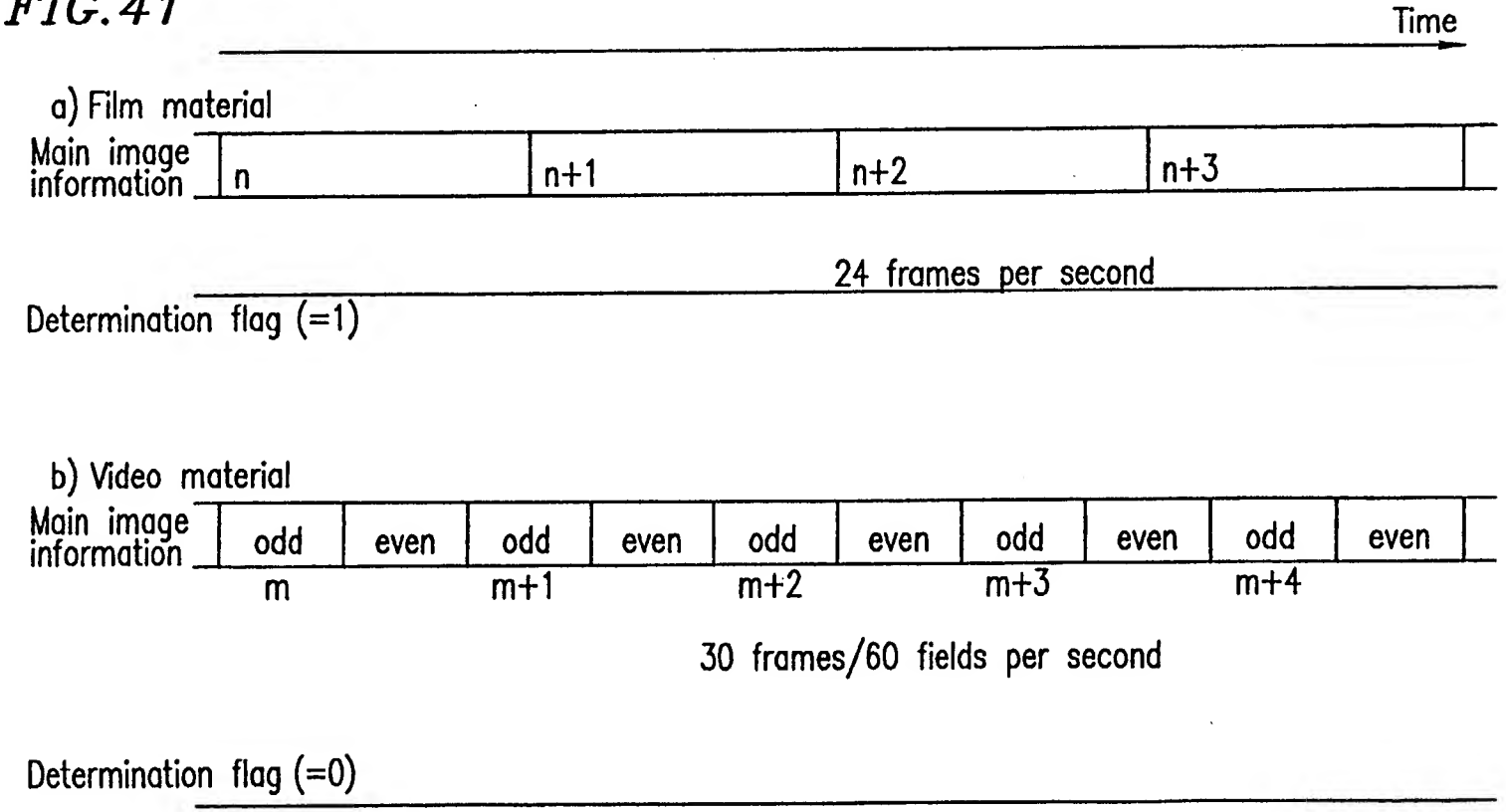

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FIG. 42

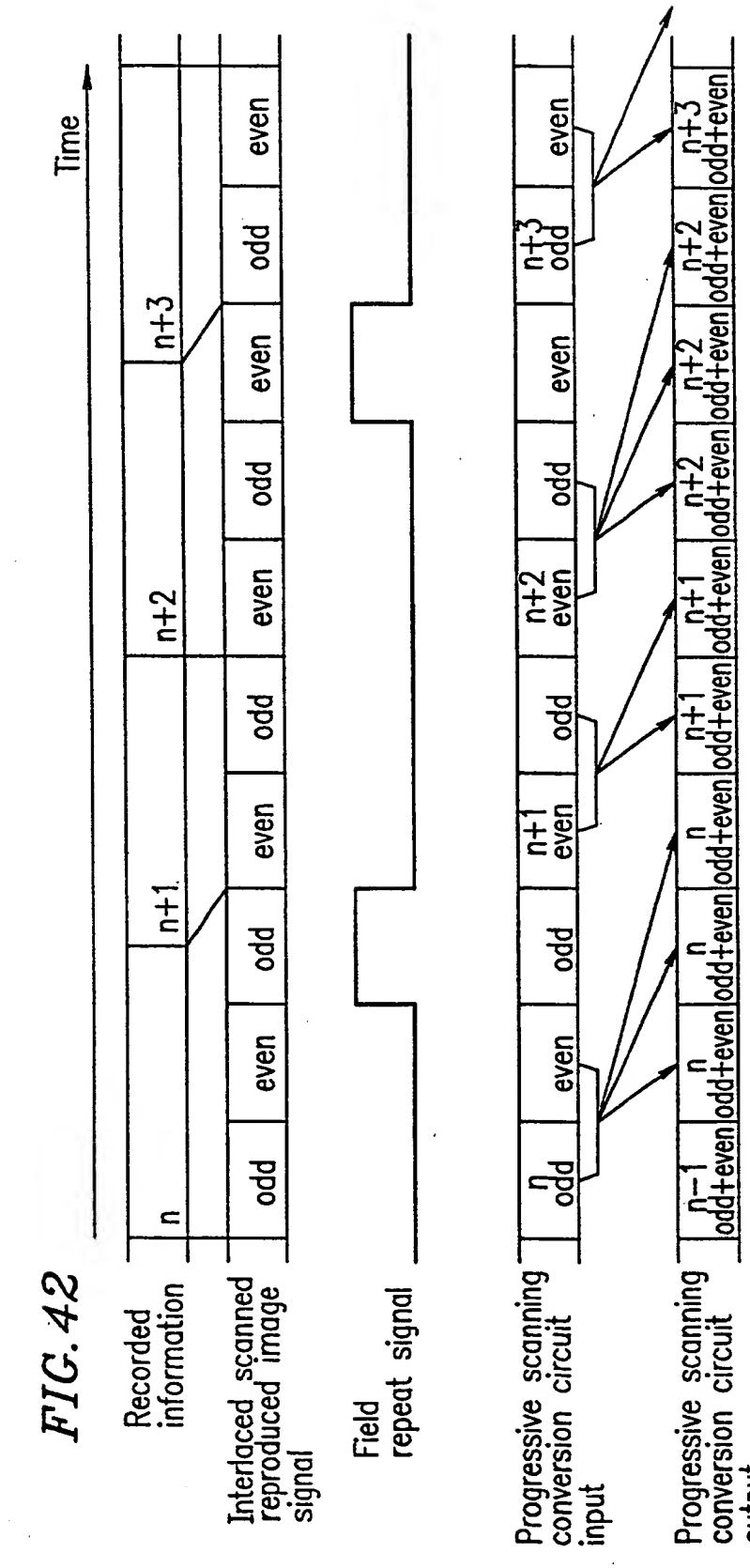

FIG. 43

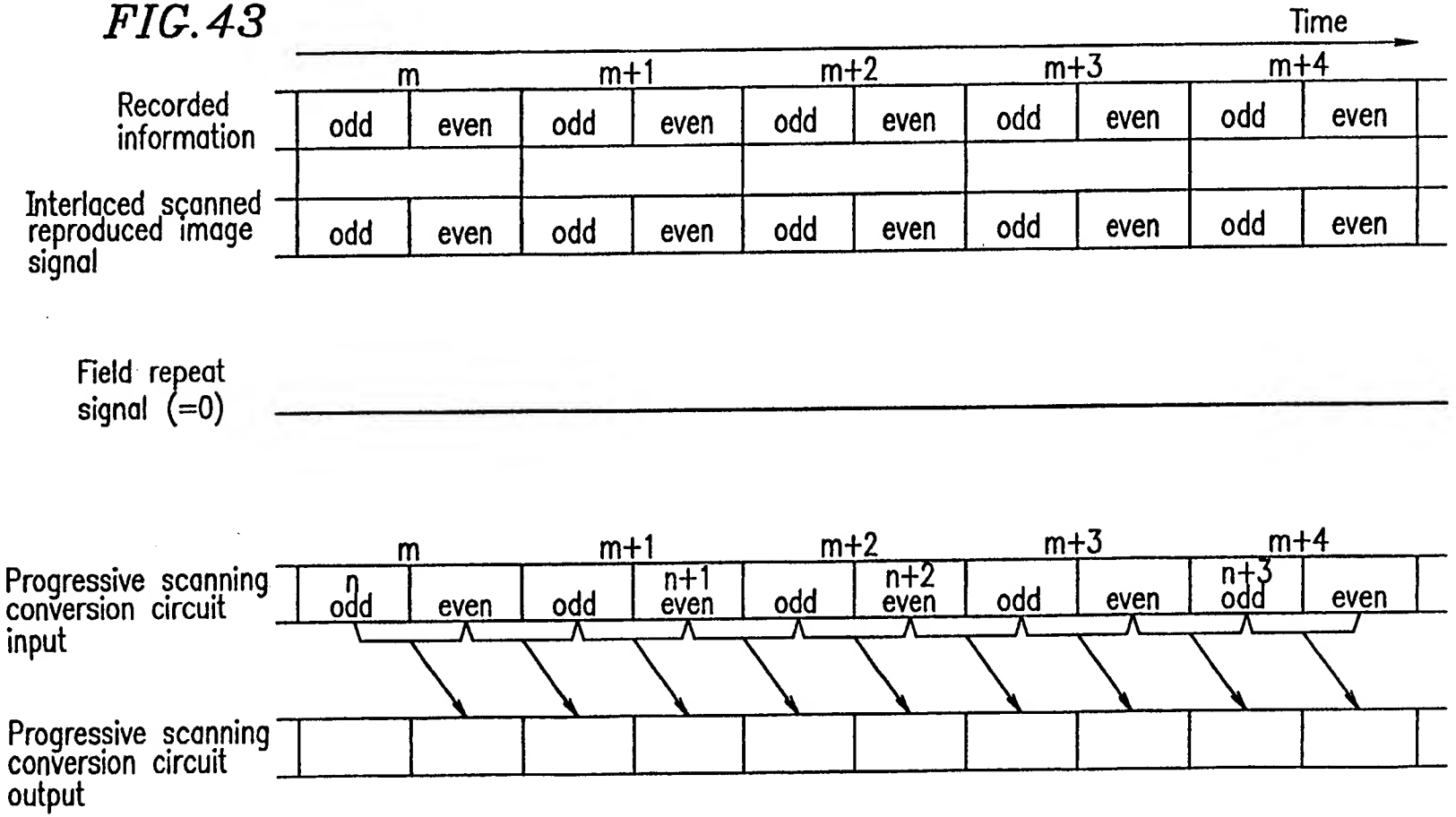
Time
m
m+1
m+2
m+3
m+4
Recorded information
odd
even
Interlaced scanned reproduced image signal
Field repeat signal (=0)
Progressive scanning conversion circuit input
n
n+1
n+2
n+3
Progressive scanning conversion circuit output

FIG. 44

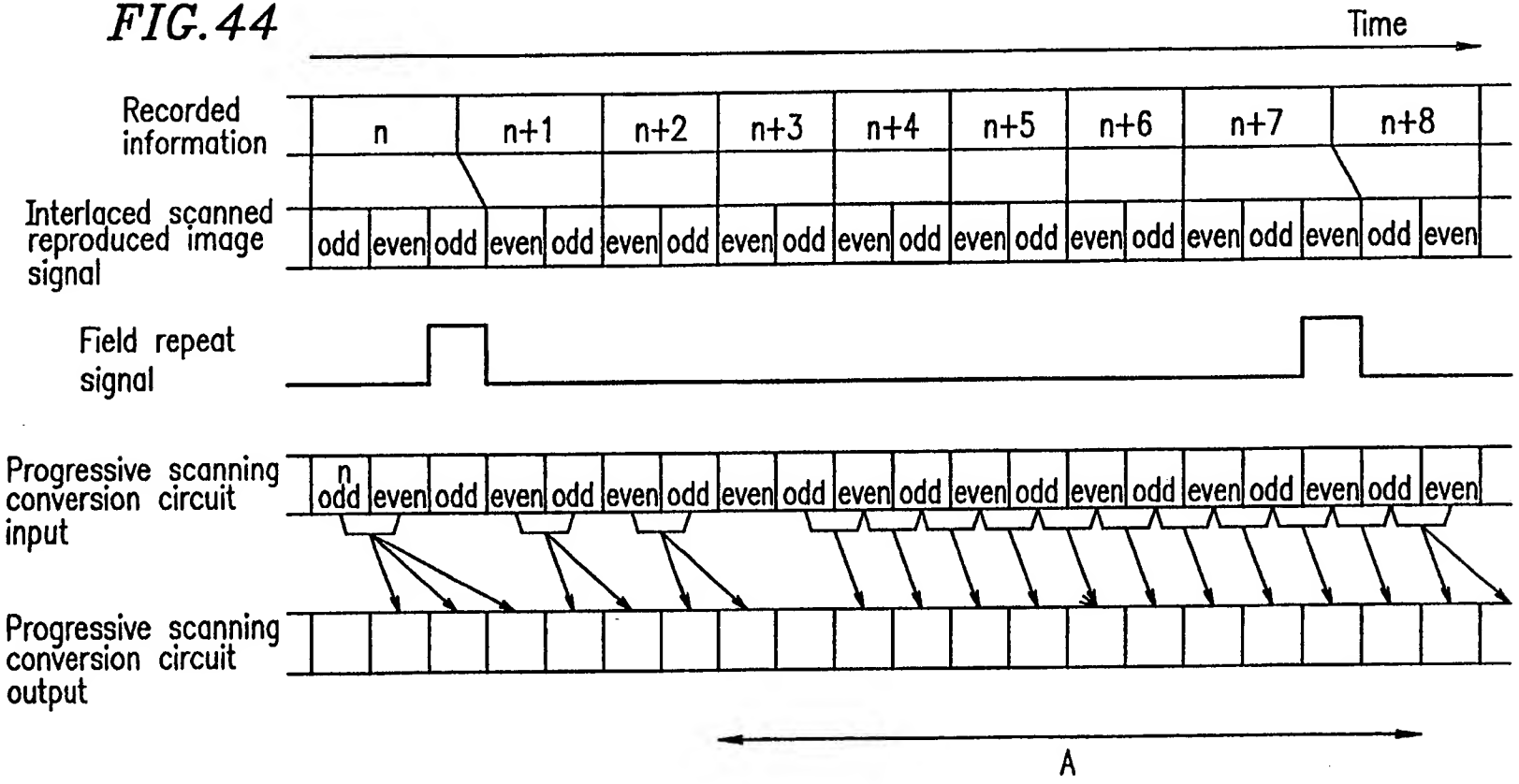
Time
Recorded information
n
n+1
n+2
n+3
n+4
n+5
n+6
n+7
n+8
Interlaced scanned reproduced image signal
odd
even
Field repeat signal
Progressive scanning conversion circuit input
Progressive scanning conversion circuit output
A

FIG. 45

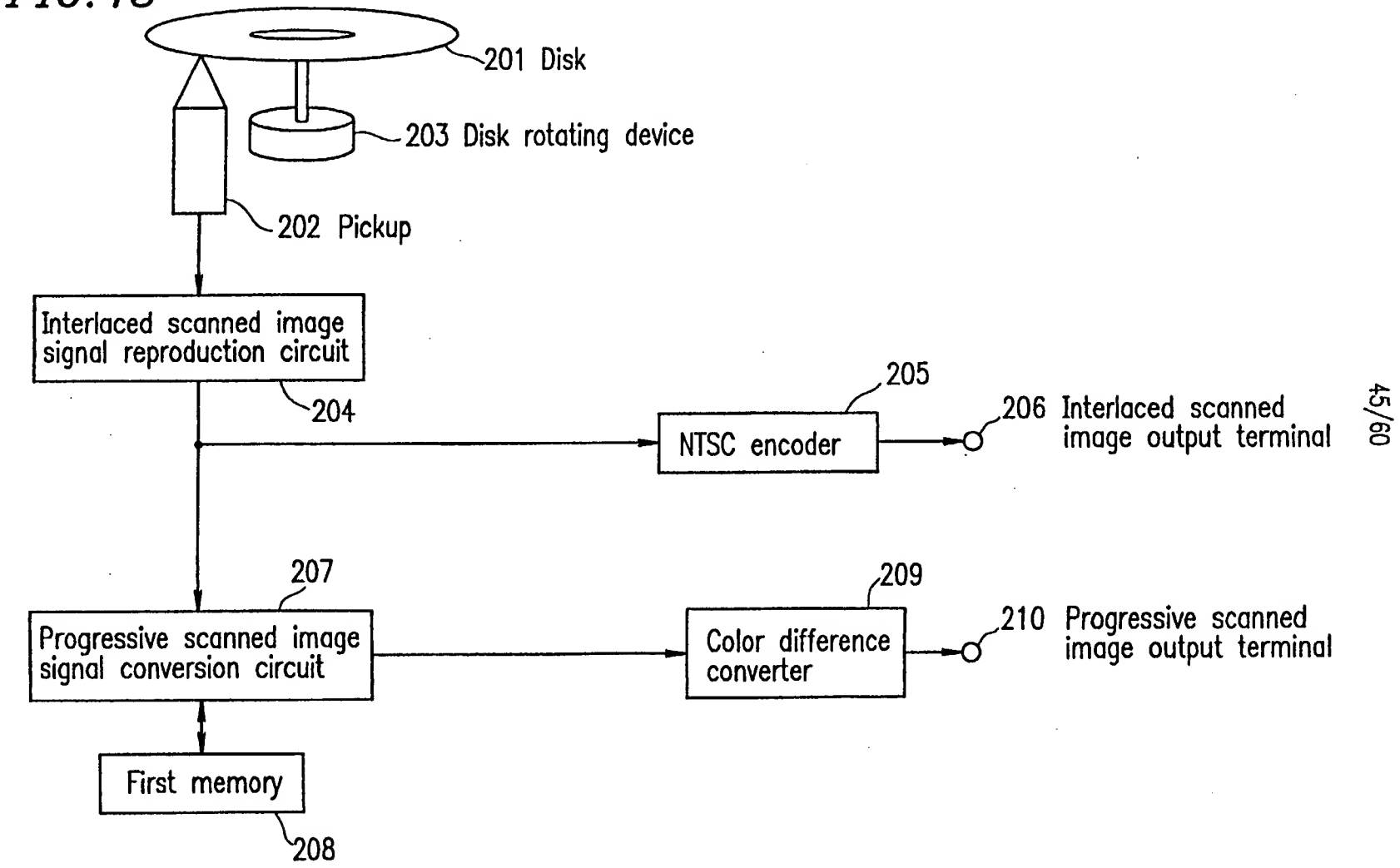

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FIG. 46

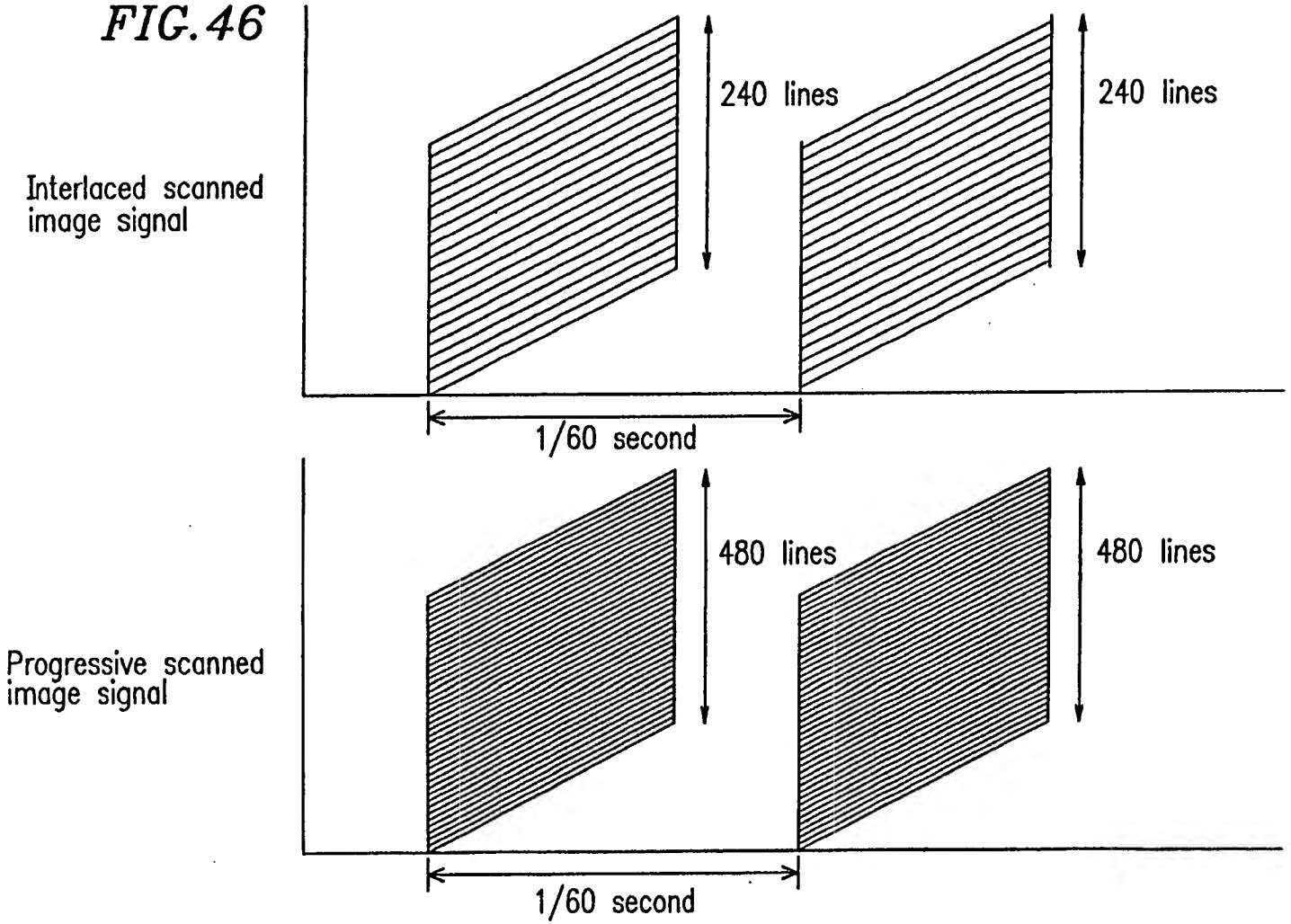

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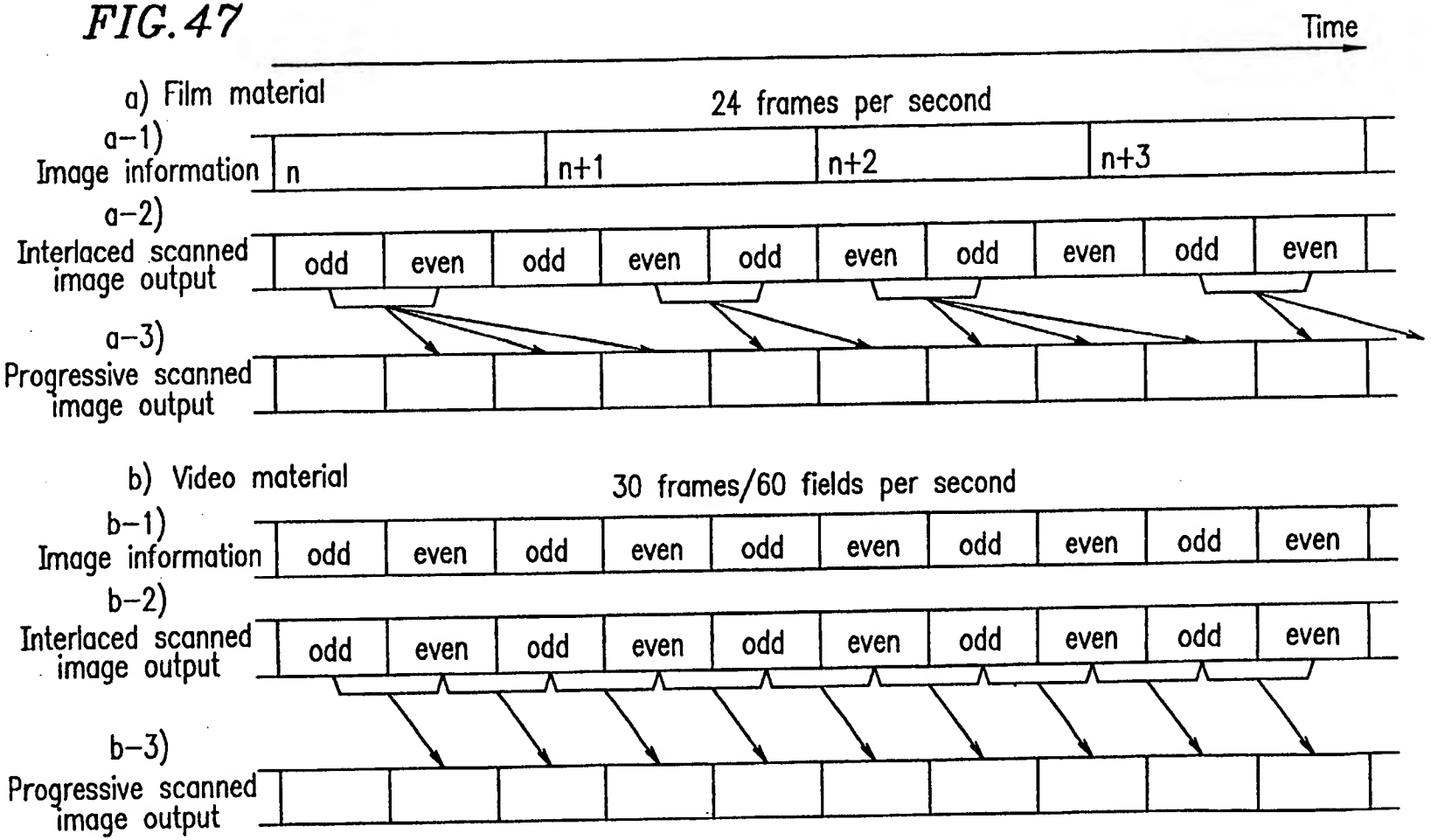
FIG. 47



960698 A0

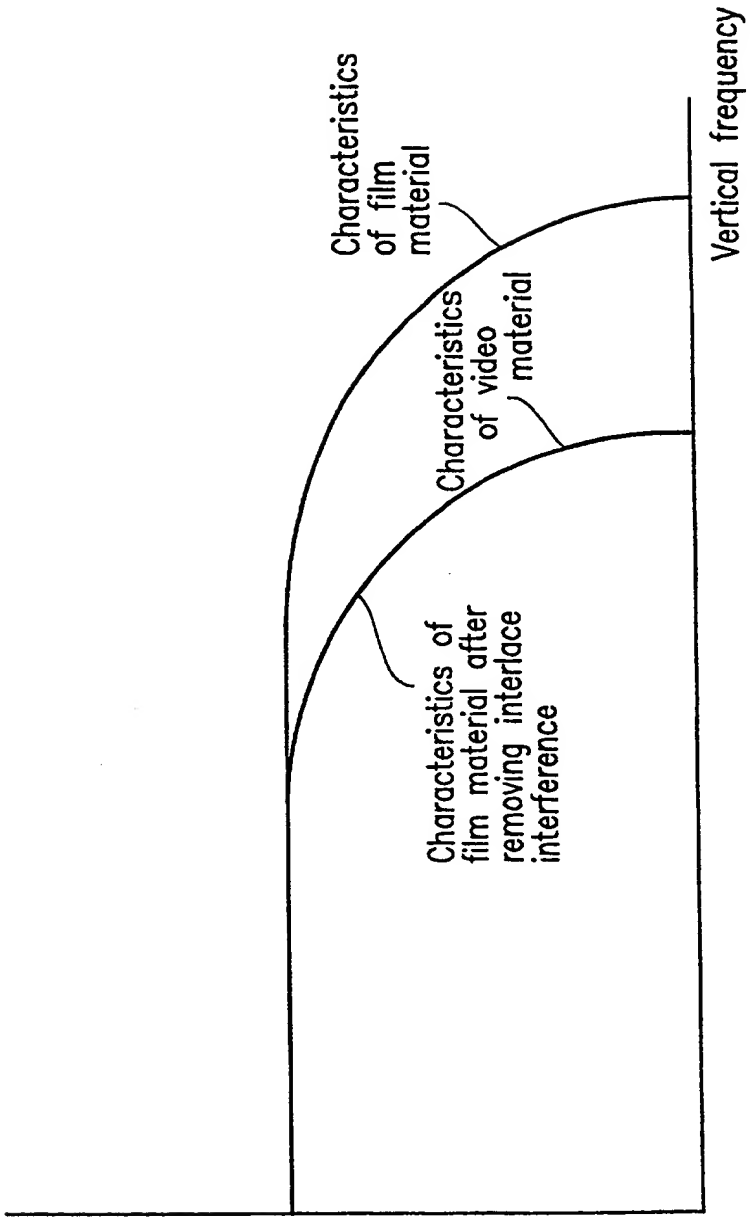

Gain
0dB
Vertical frequency
Characteristics of film material
Characteristics of video material
Characteristics of film material after removing interlace interference

FIG. 48

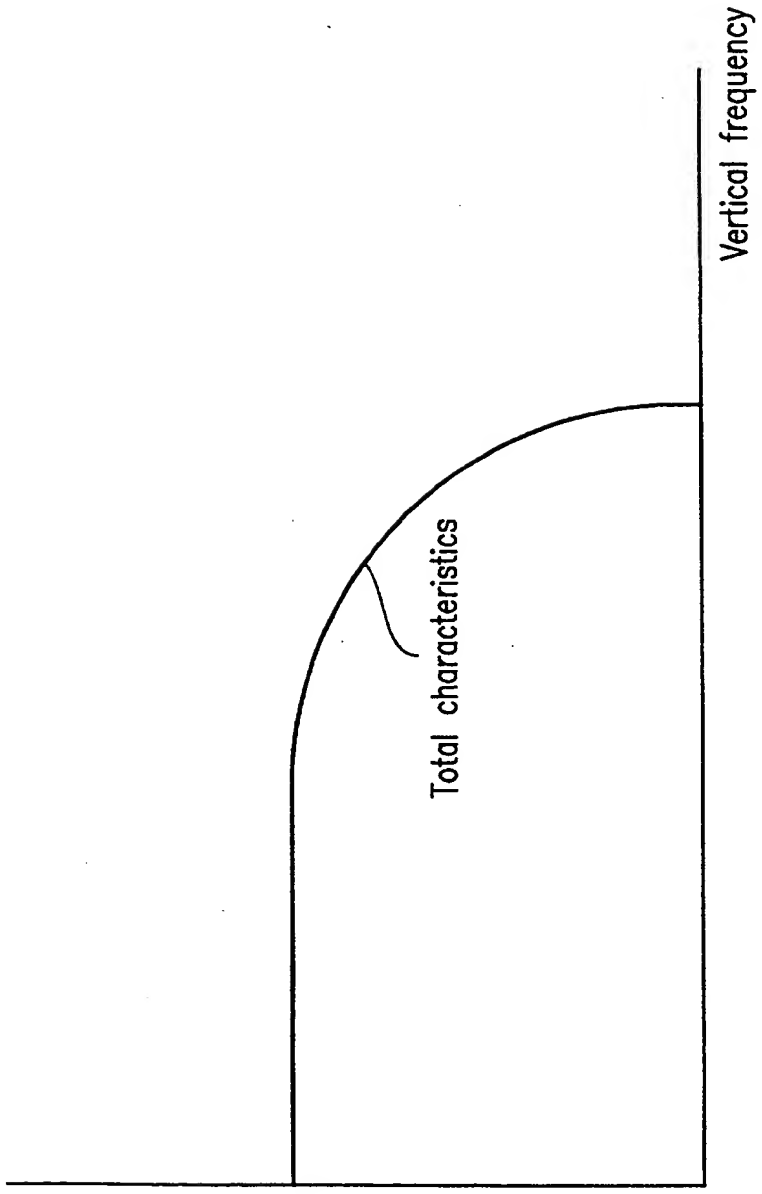


FIG. 49

FIG. 50

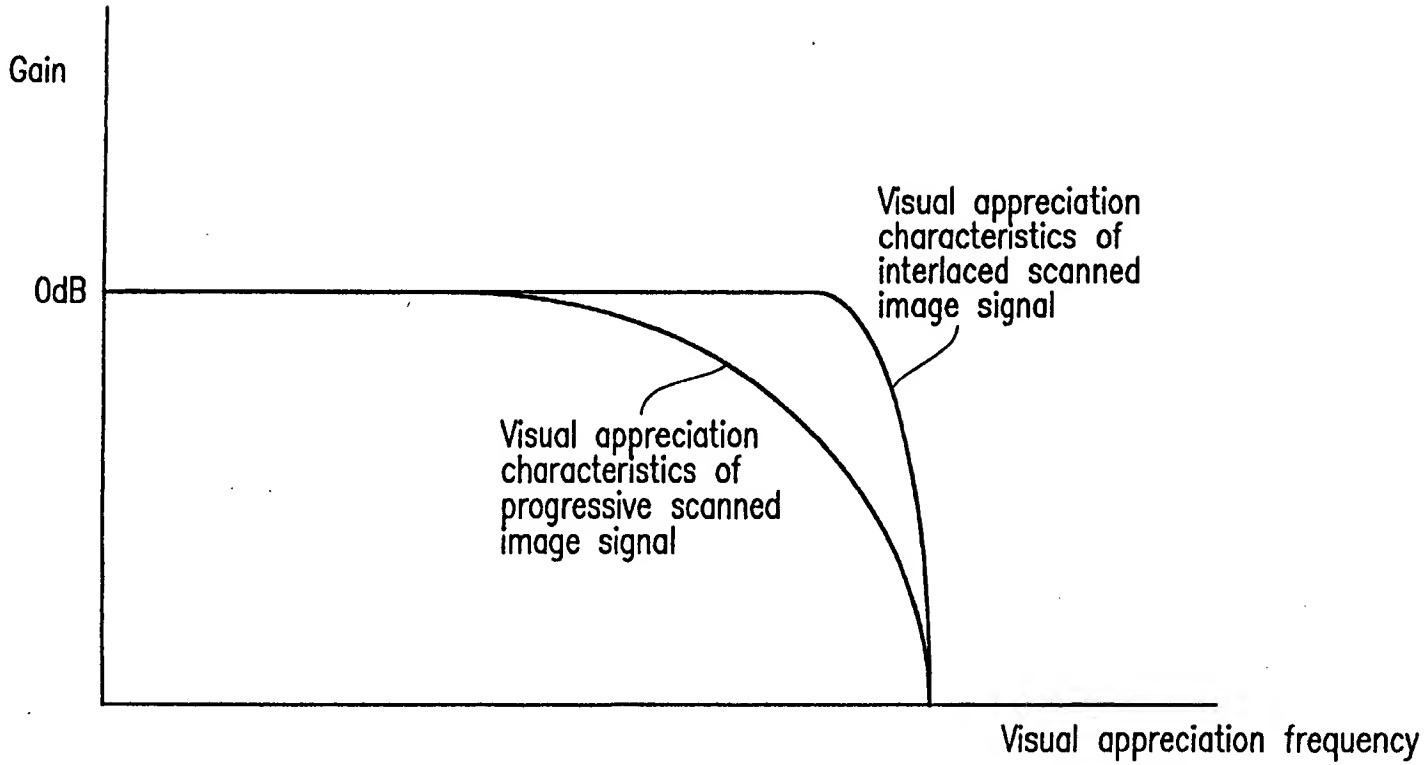


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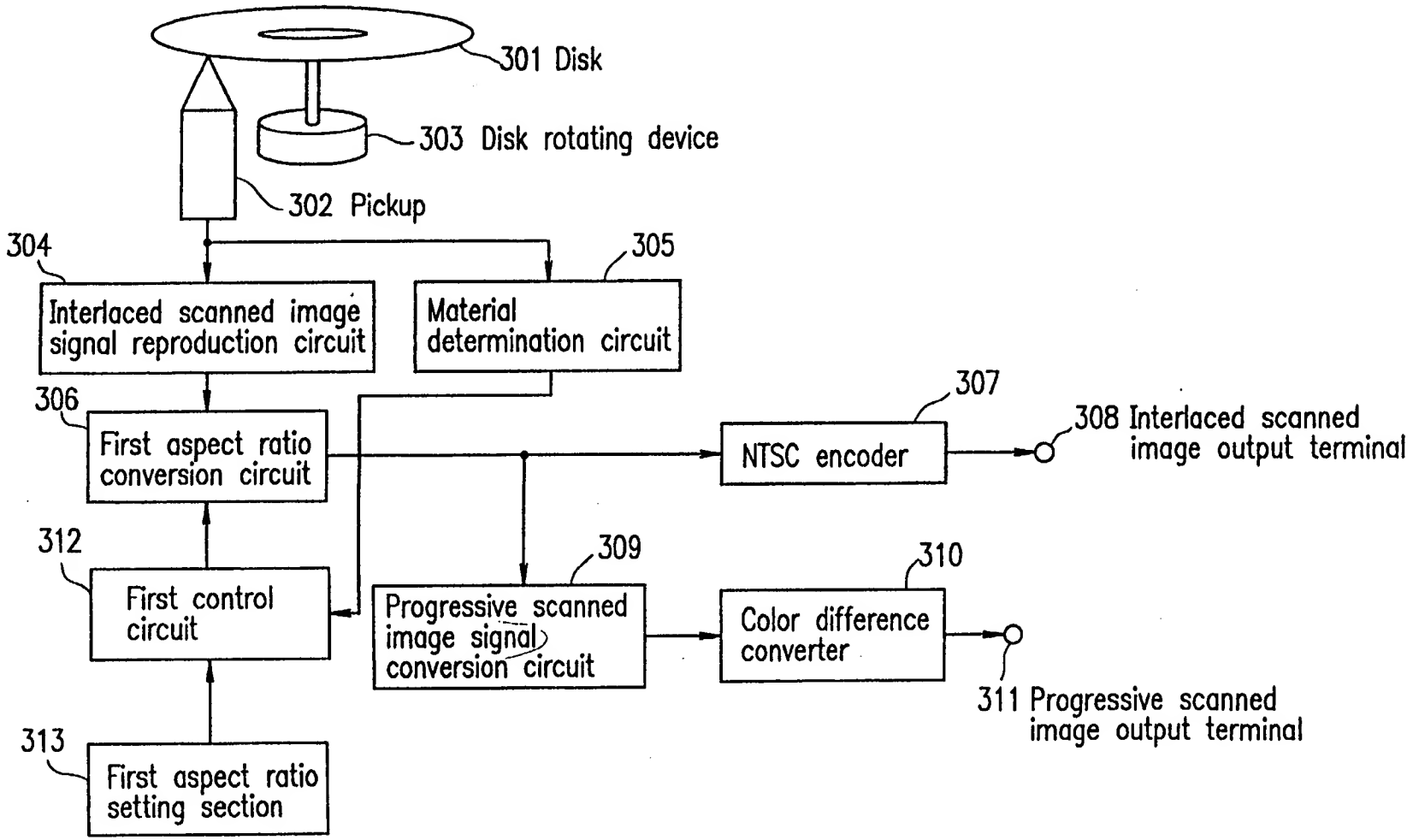
FIG. 51


301 Disk
303 Disk rotating device
302 Pickup
304
305
Interlaced scanned image signal reproduction circuit
Material determination circuit
306
307
First aspect ratio conversion circuit
NTSC encoder
308 Interlaced scanned image output terminal
312
309
310
First control circuit
Progressive scanned image signal conversion circuit
Color difference converter
311 Progressive scanned image output terminal
313
First aspect ratio setting section

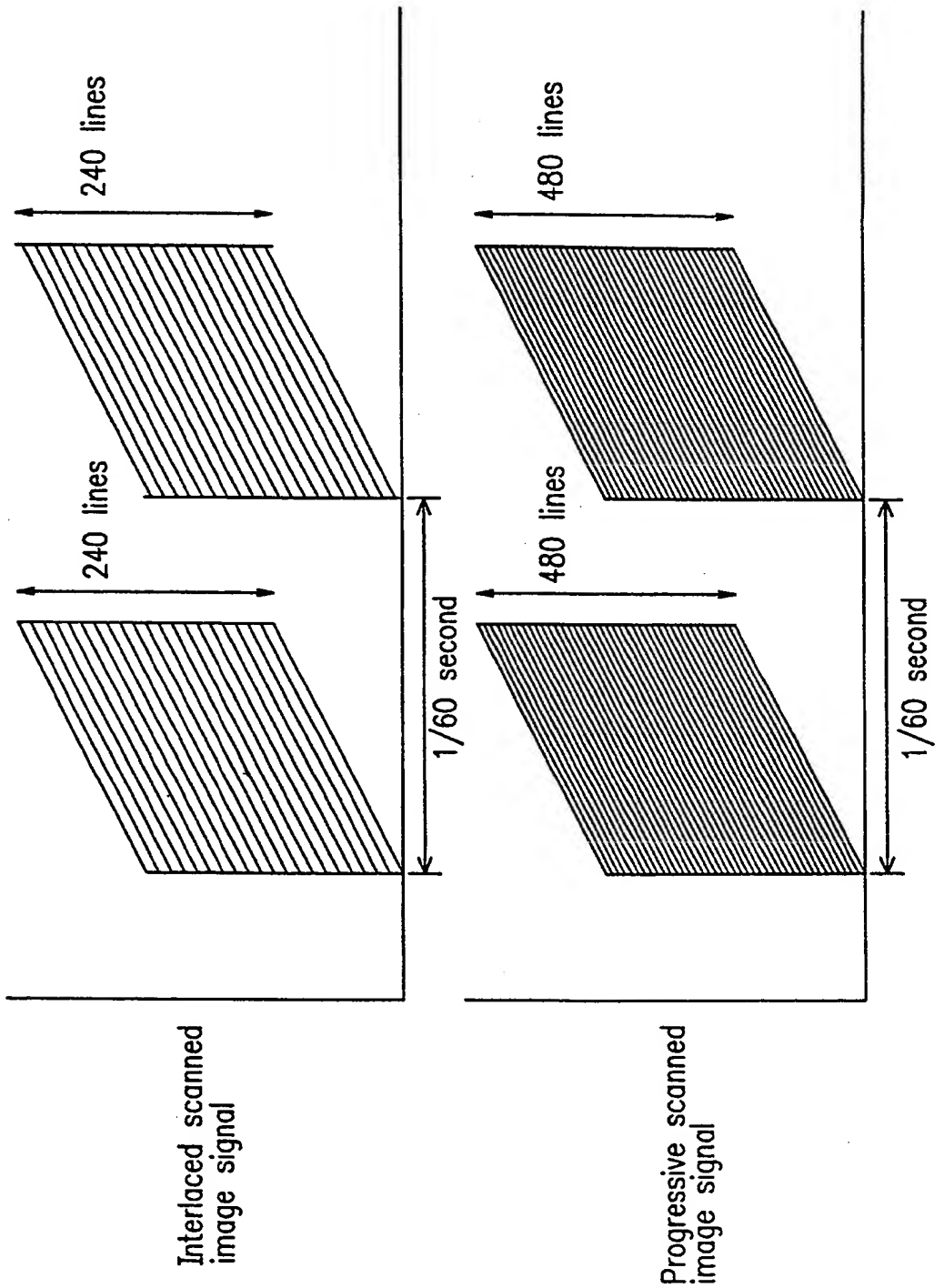

240 lines
240 lines
1/60 second
Interlaced scanned image signal
480 lines
480 lines
1/60 second
Progressive scanned image signal

FIG. 52

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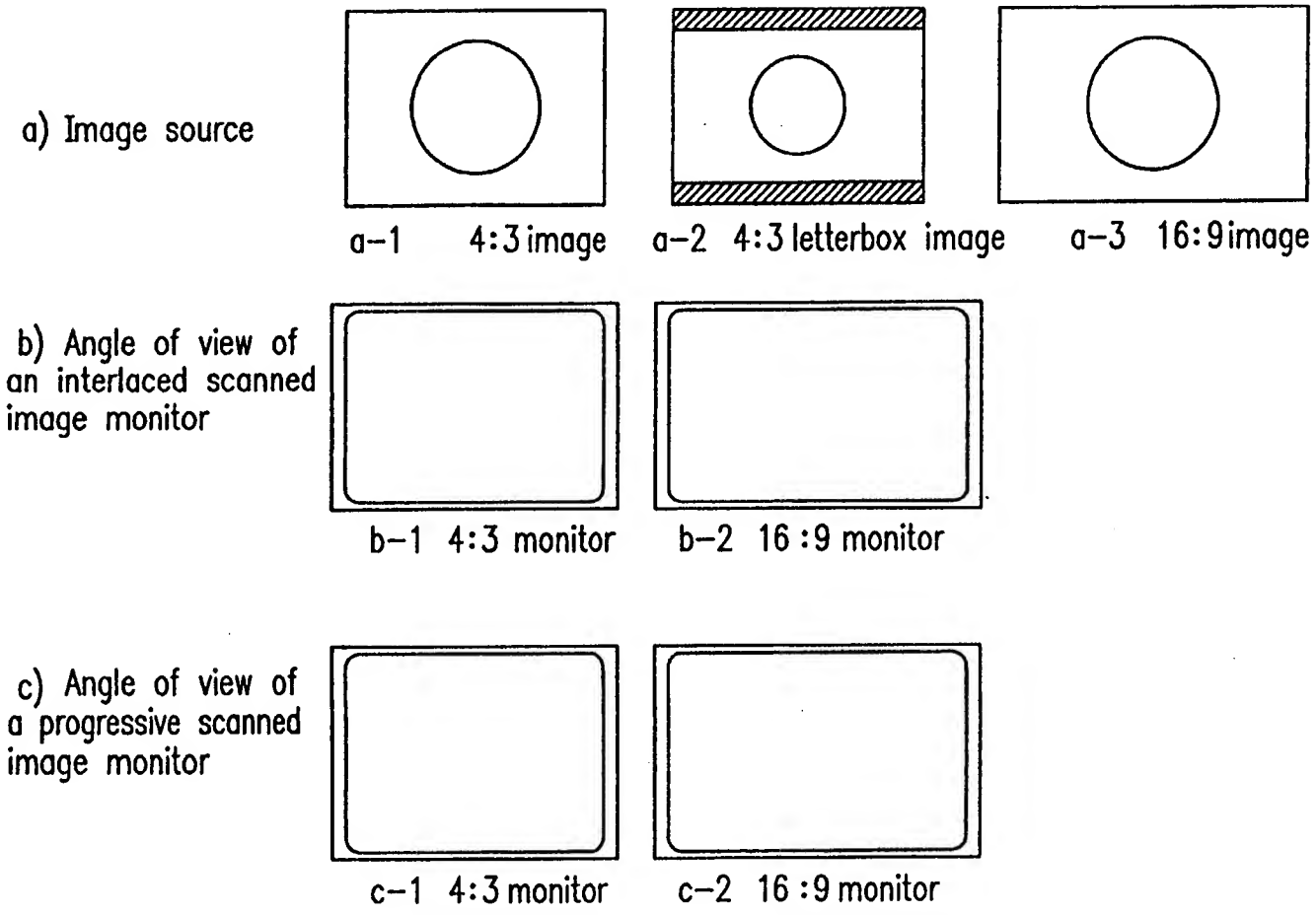
FIG. 53



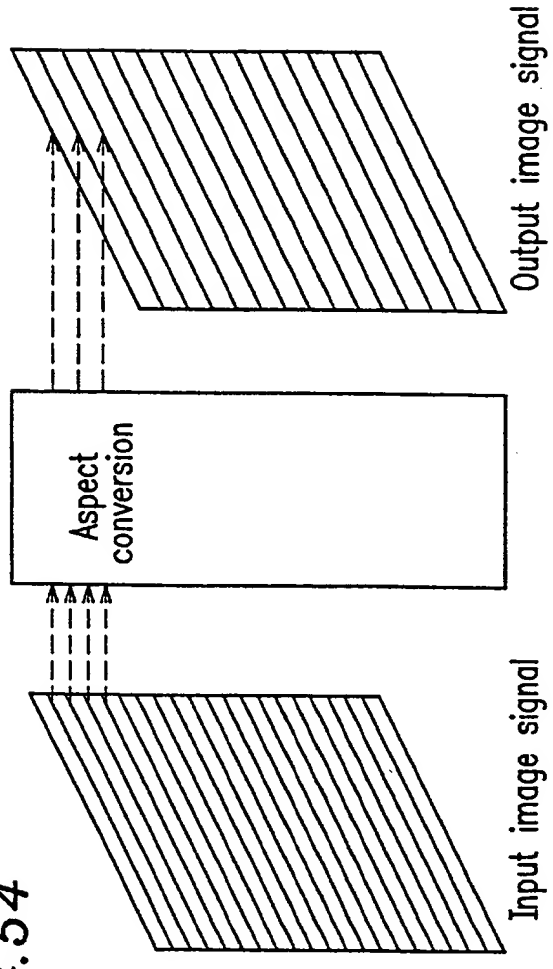


FIG. 54

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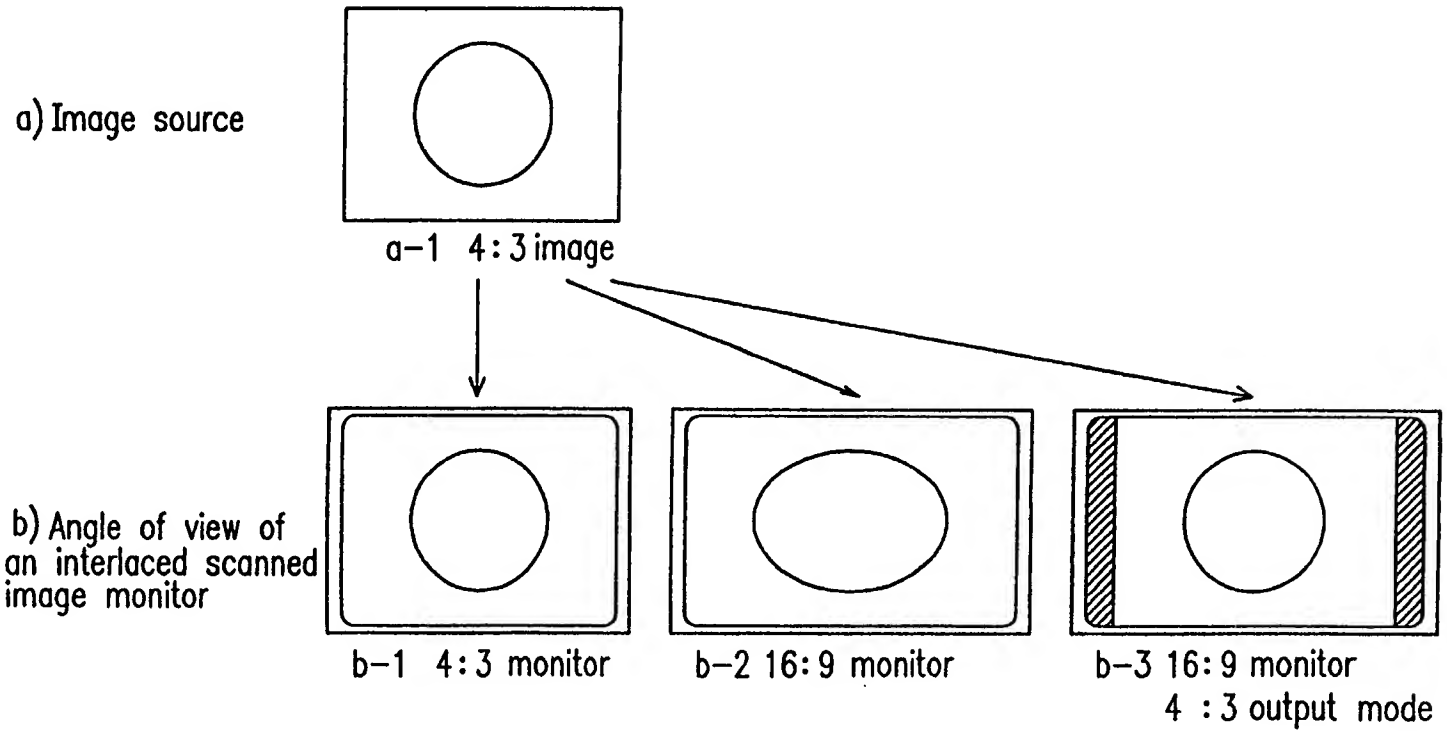
FIG.55



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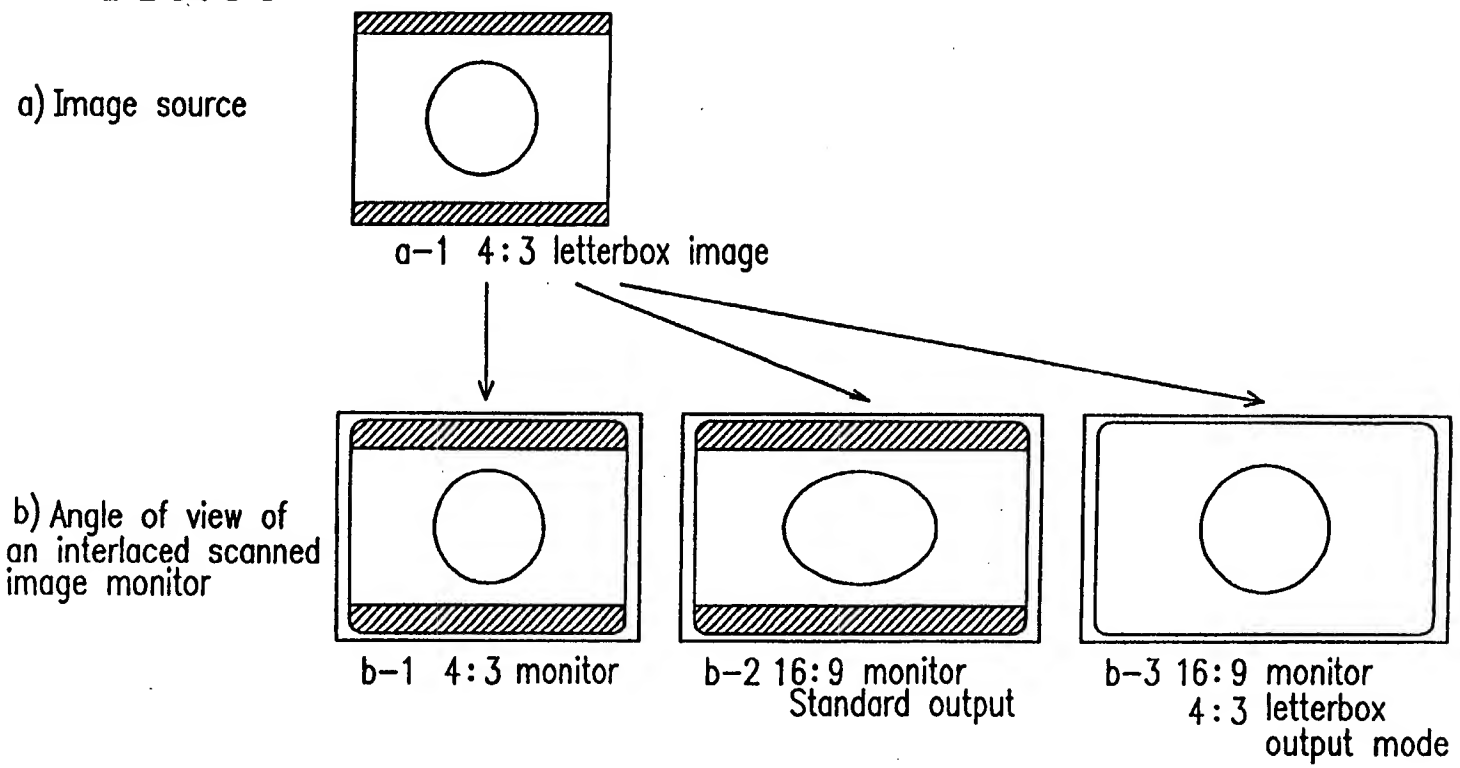
Translation of WO 96/06968

FIG. 56



WO 96/06968

FIG.57

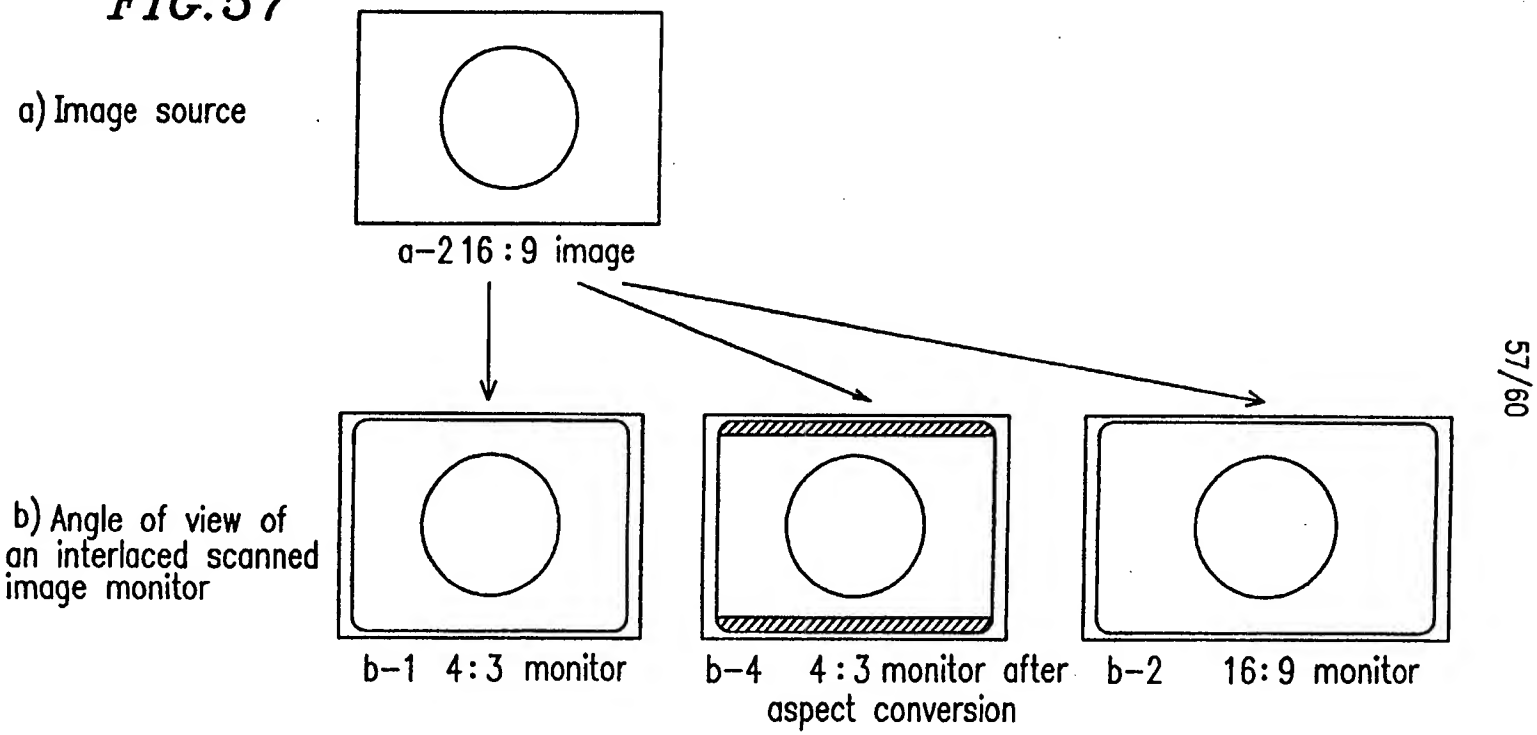


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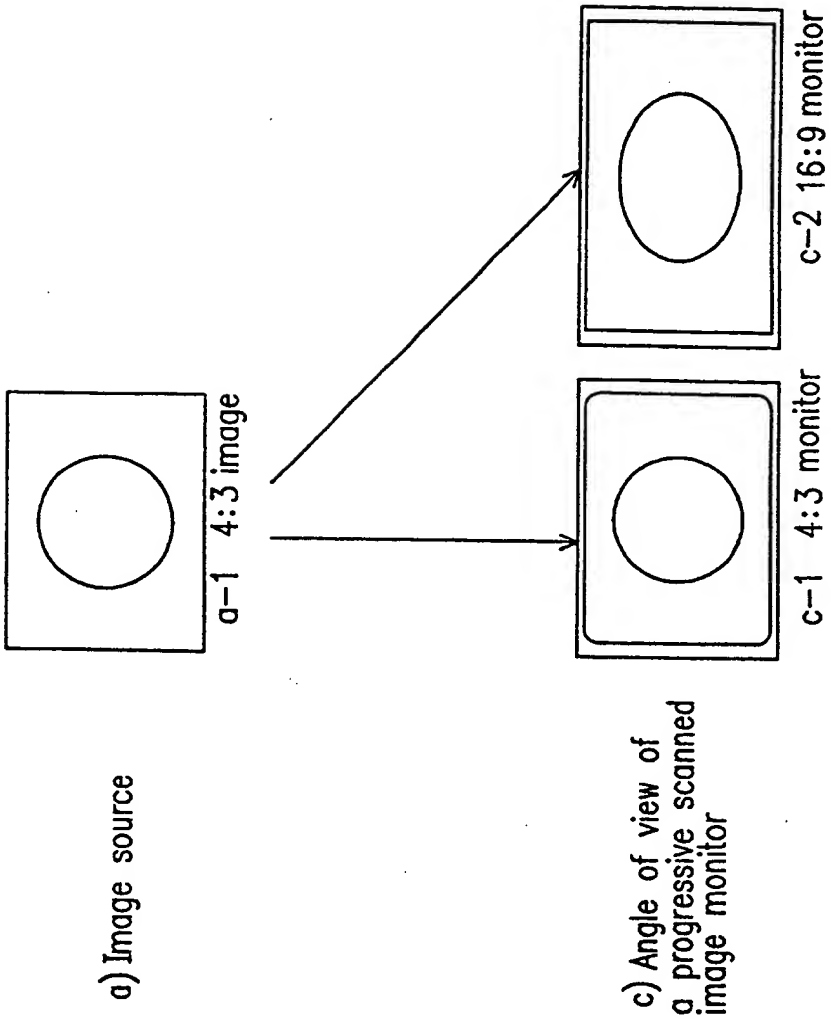
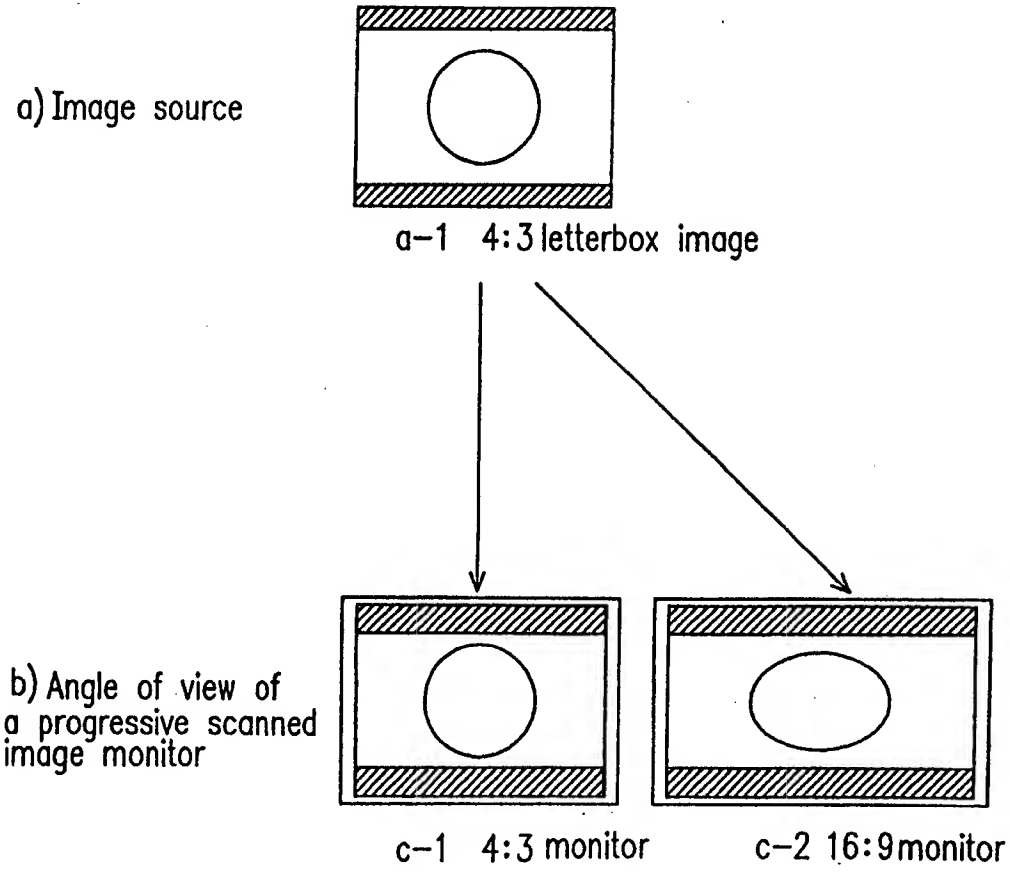
FIG. 58


a) Image source
a-1 4:3 image
c) Angle of view of a progressive scanned image monitor
c-1 4:3 monitor
c-2 16:9 monitor

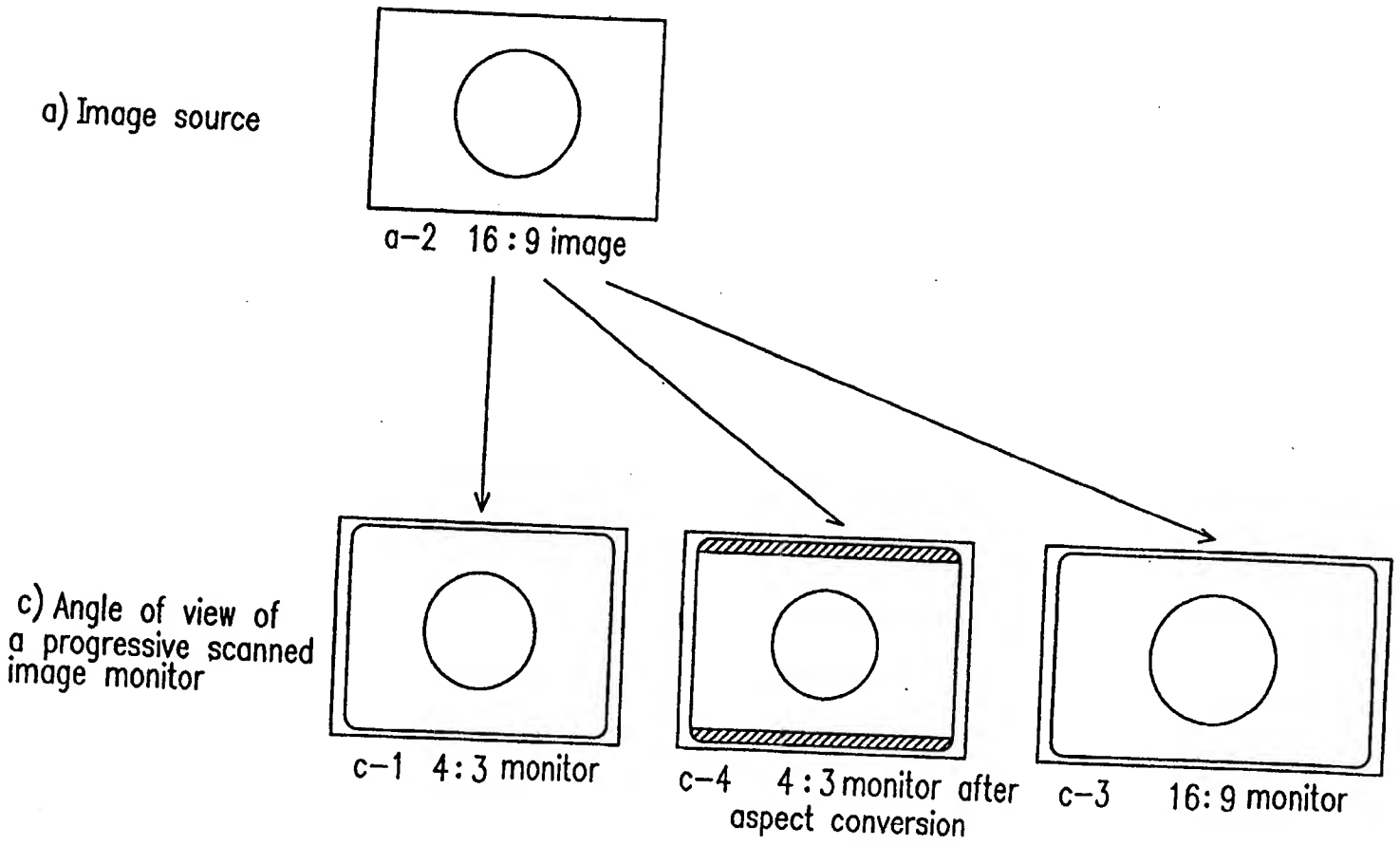
EP 2 282 550 A1

FIG. 59



EP 2 282 550 A1

FIG. 60



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